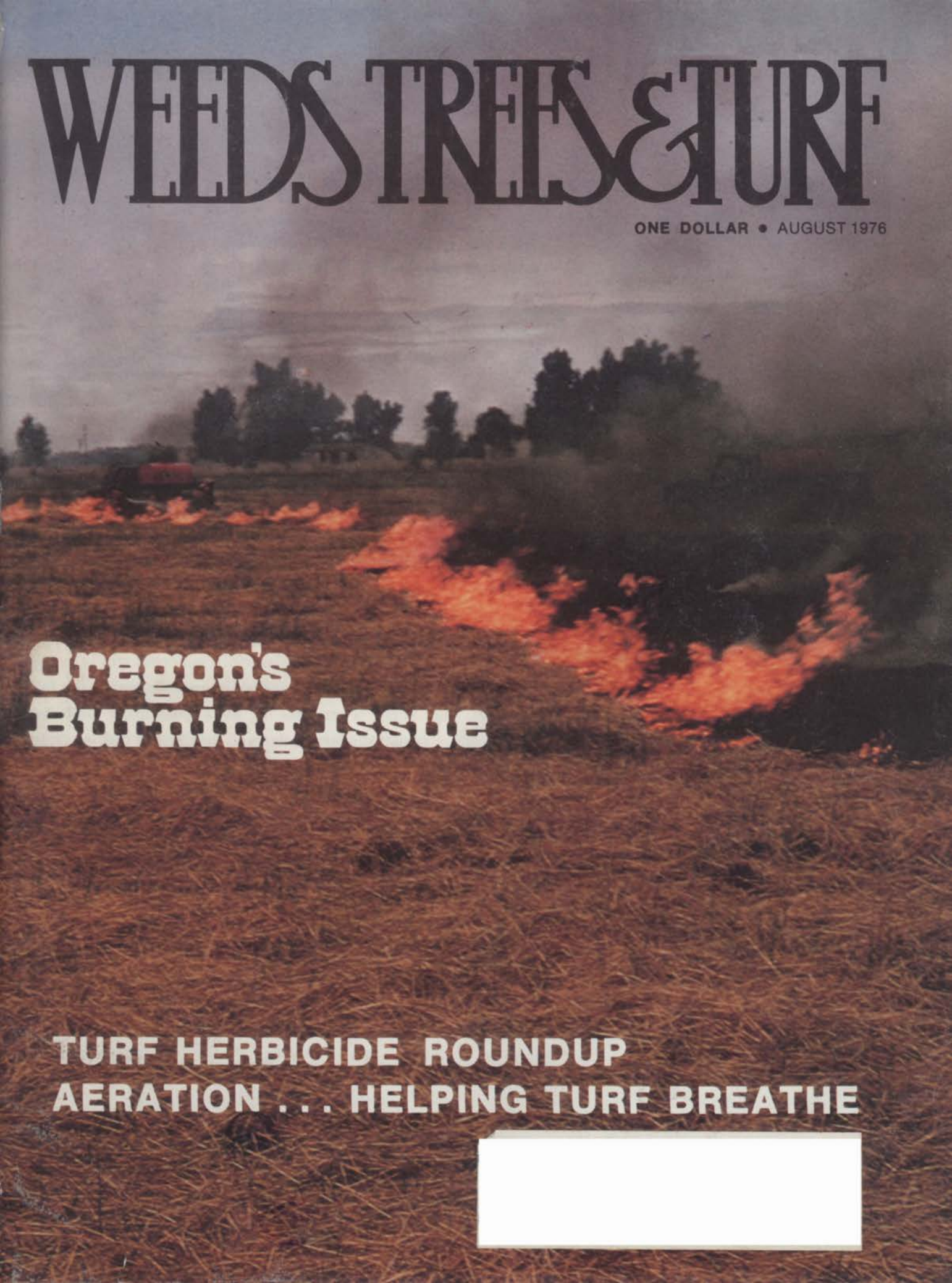
WEEDS TREES & TURF

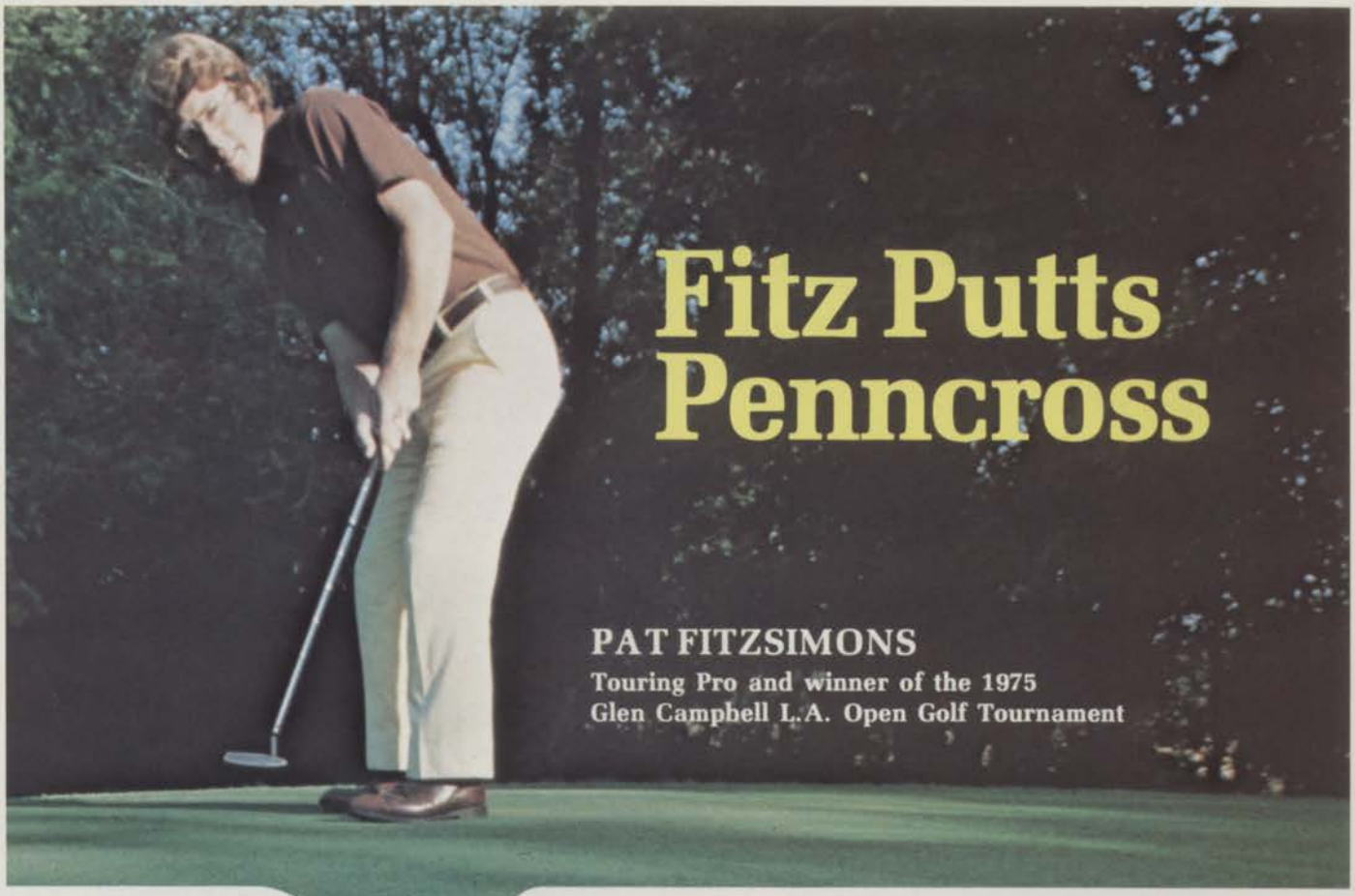
ONE DOLLAR • AUGUST 1976



Oregon's Burning Issue

TURF HERBICIDE ROUNDUP

AERATION . . . HELPING TURF BREATHE



WORLD-WIDE
DISTRIBUTOR

TEE•2•GREEN CORPORATION

1212 WEST EIGHTH STREET
KANSAS CITY, MO 64101
816/842-7825

PENNCROSS BENT GRASS

for free literature write
PENNCROSS BENTGRASS ASSN.
1349 Capitol St. N.E. Salem, OR 97303

PENNCROSS CREEPING BENTGRASS

Today's most popular variety of creeping bentgrass is found on golf courses around the world. Penncross can take the heat in warm climates and stays green longer in the fall up north. Penncross is more genetically uniform, resists disease better and establishes quicker than conventional bents. What does this mean to Pat Fitzsimons? "Consistent greens are important to me and Penncross greens have the uniformity that gives me greater confidence in putting."

"The Grass Designed For Golfers"

Write for free pamphlet on planting and maintaining Penncross greens.

 Circle 128 on free information card

Hesston Front Runner.®
It cuts costs at Host Farm. Just like it can for you.

"We have over two miles of rail fences. And the Front Runner's 80" batwing mower reaches under these fences, cutting hand trimming to almost nothing... it gets in everywhere. We tried regular mowers for this, but they didn't work. Articulated steering really does the job!

"It's faster than the big 5-gang mowers. In 1974, our crew spent about 1454 man-hours on rotary mowing. In 1975, we bought a Front Runner and saved about 454 man-hours, cutting it down about a third to 1000 man-hours... and mowed more area!

"With the vacuum attachment, we mow and clean at the same time around the hotel and other areas where appearance is especially important. It's also handy for cleaning up after the thatcher. We previously picked up grass trimmings with hand rakes or bag-equipped push mowers. Our Front Runner's eliminated most of that."

Dwight Brubaker
Grounds Superintendent,
Host Farm Resort

Host Farm Resort — in the heart of Pennsylvania Dutch country, Lancaster County. An all-season resort. That's why Grounds Superintendent Dwight Brubaker and his staff use the all-season performer — Hesston Front Runner GMT.

With 250 acres of grounds to maintain — including two golf courses — Brubaker's staff doesn't have time to constantly jump from machine to machine. Or to be slowed by excessive maintenance. That's why they use a reliable, multi-purpose Front Runner.

All three Front Runners — the GMT, Turf Truck and Three Wheeler — take on a variety of heavy-duty grounds maintenance chores. Mow, vacuum, clear snow and more with a choice of 19.8 and 23 hp models. Front-wheel hydrostatic drive provides infinitely variable speeds up to 11 mph plus instant forward/reverse — all controlled through a single lever.

Hesston Front Runner. It works for Dwight Brubaker every day at Host Farm. Find out how it'll work for you from your nearest dealer.

HESSTON
LAWN EQUIPMENT

Hesston Corporation, Lawn Equipment Division
1504 Sadlier Circle S. Dr.
Indianapolis, Indiana 46239 Phone 317-352-0193

FR-3-1175C
Dept. B

Please send me more information on Hesston Front Runner and the name of my nearest dealer.

Name _____ Title _____

Address _____ Phone _____

City _____ State/Prov. _____ Zip _____

Circle 160 on free information card

WEEDS TREES & TURF®

August 1976, Vol. 15, No. 8

10 Oregon's Burning Issue — Oregon grass seed growers depend upon open field burning for maintaining their seed at top quality, but now that 'smoke has gotten into the eyes' of Oregon legislators, both groups are fighting over the fire. It's the industry's survival at stake.

12 Oregon's Willamette Valley Suited for Grass Culture — A short profile about the Oregon seed growers affected by open field burning restrictions.

16 Turf Herbicide Roundup — Major manufacturers present their respective turf herbicides detailed by the weeds their products can control and the chemical components of active ingredients.

27 Aeration: Helping Turf Breathe — Varied methods of ventilating soil for its better health are spotlighted and described by Roger J. Thomas, vice president of the Turf Equipment Division of Jacobsen.

30 Industry News — New York tree firm reports gains with its employee stock ownership plan. Energy prices grip future of irrigation crop yields. Tree and landscaping merge for expanded market service. FTGA plans conference for Orlando. ALCA opens competition for landscaping awards.

People 6
Government News 8
Products 34
Meeting Dates 48
Classifieds 47
Advertisers Index 47

The Cover — Oregon's open field burning insures a heartier, more weed resistant crop for next year's seed.

Copyright© 1976 by The Harvest Publishing Company, a subsidiary of Harcourt Brace Jovanovich, Inc. Publishers of Pest Control, Weeds Trees & Turf, Golf Business, Pennyslvania Farmer, Ohio Farmer, Michigan Farmer, Missouri Ruralist, Kansas Farmer. Books: Scientific Guide to Pest Control. 9800 Detroit Ave., Cleveland, Ohio 44102.

Member, American Business Press, Business Publications Audit ABP BPA

Single Copy Price: $1.00 for current and all back issues. Foreign $1.50. Subscription Rates: WEEDS TREES AND TURF is mailed free, within the U.S. and possessions and Canada, to qualified persons engaged in the vegetation care industry and related fields in controlled circulation categories. Non-qualified subscriptions in the U.S. and Canada are $10.00 per year; other countries, $12.00 per year. Controlled circulation postage paid at Cleveland, Ohio 44101.

Bruce Shank
Acting Managing Editor

Eloise M. Ross
Acting Associate Editor

BUSINESS STAFF

Hugh Chronister
President and Publisher

Richard J. W. Foster
General Manager

Paul Baltimore
Operations Director

Jack Schabel
Circulation Manager

Dr. David Harmon
Research Director

Dorothy Lowe
Classified Advertising Manager

EDITORIAL AND ADVERTISING OFFICES

Headquarters: 9800 Detroit Ave., Cleveland, Ohio 44102 (216) 651-5500,

Richard J. W. Foster, National Marketing

East: 757 Third Ave., New York, N.Y. 10017 (212) 421-1350, Russell B. Bandy, Regional Sales Manager

Mid-Atlantic: 9800 Detroit Ave., Cleveland, Ohio 44102 (216) 651-5500, Patrick J. Lamb, Regional Sales Manager

Midwest: 333 N. Michigan Ave., Chicago, Ill. 60611 (312) 236-9425, Jeff Ward, Regional Sales Manager
Tourisse Greenfield (312) 337-7717

West: Graves/Snyder/Sandford, 4311 Wilshire Blvd., Los Angeles, Calif., 90010 (213) 933-8408, William Snyder, Regional Sales Manager

MEDALIST® 5

The concept of the future in a turfseed formula for today.

As costs rise and the margin for error shrinks, the trend in turf management is toward the balance and security of the blend concept.

With the Medalist blends for winter overseeding, Northrup King has been working toward the future for a long time. Now our work pays off in the Medalist Brand 5 formula with Pennfine Perennial Ryegrass, probably the best wintergrass available today.

In Medalist 5, Pennfine is combined with other improved fine-leafed varieties. They've all been play-tested in formulas on golf courses throughout the South. Careful testing under playing conditions has been part of the Northrup King blend approach from the very beginning.

To find out how the concept of the future can work for you this winter, write: Medalist 5, Northrup, King & Co., P.O. Box 370, Richardson, Texas 75080 or P.O. Box 29583, Atlanta, Georgia 30329.

NORTHRUP KING®

Circle 125 on free information card

People on the Move

Fred W. Slife of the University of Illinois was elected president of the *Weed Science Society of America* when it met in Denver last February. Slife succeeds Dr. C. R. Swanson of the USDA/Agricultural research, Service Southern Region, New Orleans. Keith C. Barrons, development officer for Dow Chemical Co., was named an honorary member.

Lots of changes are happening out in Washington. Here's some: John Rogers is the new superintendent at *Twin Lakes CC,* Federal Way and has David Gianoli as his replacement at *Green Meadows CC.* Ralph Strading, Jr. has stepped back into his former job of manager-superintendent at *Lewis River GC,* Woodland, replacing David.

C. R. (Chuck) Braun, Sr. is *Princeton Manufacturing Company's* new national sales manager. He will be in charge of the sales/marketing program for the Princeton's sod and nursery equipment. Princeton is located in Columbus, Ohio.

Velsicol Chemical Corporation elected Raymond W. Ver Hoeve as its executive vice president. He is responsible for all research and manufacturing activities of the corporation. Ver Hoeve has B.S. and M.S. degrees in chemical engineering from Syracuse University and attended the Executive Management Program at Pennsylvania State University.

Eric G. Mueller is now sales administrator for the outdoor power equipment division, *J I Case Company.* An honors business administration graduate of the University of Wisconsin at Oshkosh, he will monitor marketing systems analyze sales programs and measure sales force effectiveness.

Dr. Jim Beard of *Texas A & M* is preparing a new 'bible' of turfgrass maintenance. The USGA chose him as editor to produce a book of the latest scientific and practical knowledge of the subject. Bob Williams is one of the review committee board working with Dr. Beard.

Tom Mascarro is abandoning retirement to try making a new management tool. It's a *Poa annua* control machine and will probably find a test market around Chicago.

Mike McGee is the new superintendent at the *Newport Golf Course* at Newport Beach, Calif.

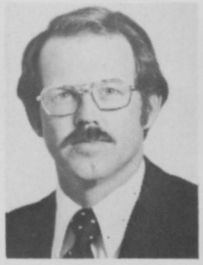
Chris Lemke now serves at superintendent at *Meadow Lakes Country Club,* Escondido, Calif. His dad is Ralph Lemke, superintendent at Stoneridge Country Club, Poway, Calif.

Uelner

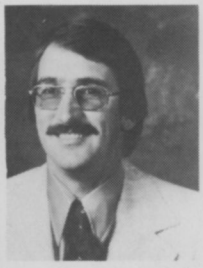
Ver Hoeve

Roy W. Uelner was elected executive vice president of the *Allis-Chalmers Corp.* He will handle the company's worldwide operations in the agricultural equipment business. Uelner came to Allis-Chalmers as an industrial engineer, and has worked as a general plant manager, manager of combine operations, sales and marketing manager, and general manager and vice president of the agricultural equipment division.

New officers of the *Central New York Superintendents Association* are: Dan Nicholas, Village Green Country Club, president; Eric Dann, Drumlins Country Club, vice president; Bill Stark, Pompey Hills Country Club, secretary; and Ed Brown, Radison Country Club, treasurer. Board members are Tom Brown, Calvary Country Club; Robert Miller, Enjoy Country Club; Jim Strain, Birmington Country Club; and Dick Snyder, Arrow Head Country Club.



Black



Hoover

Ed Shoemaker, national sales manager for *Rain Bird,* has announced the appointment of Chuck Hoover as the company's turf district manager for Southern California. His experience includes coordinating the sale of extended, fabricated and molded plastic parts to the irrigation trade.

Dr. Henry Yonce is now an agricultural research scientist at *3M Company's* Agrichemicals Project. He will test herbicides, work with state and federal researchers in studies of agricultural chemicals and be in charge of 3M's field development programs in the southeastern U.S.

Glen and Cindy Butherus are sharing manager-superintendent duties *At Vernonia (Ia.) Golf Course.*

R. C. Black, president of *Perlite of Houston, Inc.,* was elected to a two-year term as president of the Perlite Institute. The honor came at the Institute's 27th Annual Meeting in Montreal. Black was vice president of the Institute and served as chairman of the Institute's Concrete committee and as a member of the applicator committee.

Before a Johns-Manville irrigation system is put to the task, it's put to the test at the most modern test facility in the business.

We want to make sure that our Buckner® irrigation systems will provide years of perfect irrigation to protect your turf investment. So we put the Buckner products to the test at our new Fresno proving ground.

Our new facility, the most modern of its kind in the irrigation industry, is equipped with the latest technological equipment. Product performance is electronically measured and a visual read-out shows exactly how sprinkler heads distribute water.

We go to all this trouble for three very good reasons:

First, it helps us develop new irrigation products.

Second, we want to make sure that every Buckner sprinkler can do everything the specifications call for.

Third, the test facility helps us develop programs to design the irrigation system that exactly fits your needs, based on variables such as climate, soil and types of turf.

So the next time you're planning to replace an old system or need to add a new one, call the Irrigation TECHspert at your nearest J-M distributor. (He's in the Yellow Pages.) His specialized knowledge and experience will help you in designing your system, and make all the difference when it comes to protecting your turf investment.

For more information, call Carroll Wood at (303) 770-1000, ext. 3330, or send the coupon.

Discover the ways Johns-Manville Technology can help you. With insulation. Pipe & irrigation systems. Mining & minerals. Building & roofing products. Filtration. Industrial products.

Johns-Manville

Johns-Manville
P.O. Box 5108-AT/42
Denver, Colorado 80217

☐ Please send me more information on J-M turf irrigation systems.
☐ Please have a J-M TECHspert call on me.

Name _____ Title _____
Firm _____ Phone _____
Address _____
City _____ State _____ Zip _____

Circle 136 on free information card

Government News

New safety regulations for farm equipment will affect farmers as employers. Effective since June 7, all agricultural equipment, despite age, must have a completely guarded power take-off drive line, and shields and guards that stay in place. Farmers are required to train employees in safe operations. After June 7, signs are required "at prominent locations" on tractors and power take-off driven equipment to warn employees about keeping shields in place. Other warning signs are also needed if removal or a guard or access door exposes employees to a moving part after the power is off. Employees are advised to look and listen for evidence for rotation and not remove the guard of access door until parts have stopped.

Sod farmers have won another soil depletion case. U. S. Tax Court upheld the right of sod growers to claim cost depletion allowance for soil removed in cutting sod. The ruling followed testimony proving soil would be of no value after 16 cuttings and could not be restored economically. A government appeal may follow.

According to research by Dr. Hardin B. Jones, professor of physiology and medical physics at the University of California at Berkeley, chlordane and heptachlor function more like cancer suppressants than causative agents. Many pesticides tests don't have proper controls, he says, and cancer results from toxic overdoses hundreds of thousands of times higher than farm applicators actually use. Dr. Hardin's studies support research by Dr. Bruce Ames and his co-workers also at Berkeley.

The EPA will have reviewed and classified pesticides by September. Although only private and commercial applicators will have power to make "restricted applications," chemicals falling under the 'general use' category are available for application by the public. Some 45 states are going through the final stages of preparing applicators certification plans, 11 have plans contingently approved by EPA. EPA plans to approve plans for eight states and 14 states are near completion. Applicators' certification is required by October, 1977.

Mallinckrodt, Inc. unsuccessfully filed a motion to reopen mercury hearings after they claimed to have proof of mercury used to control snow mold on golf courses. EPA, however, said the evidence is not substantial enough to affect the order and that the motion was filed too late.

Agencies have increased highway expense monies for all highway functions from $13.5 billion to $25.5 billion in 10 years but find themselves facing a steadily deteriorating highway system. Inflation makes the 1975 funding only $12.8 billion in 1975 dollars. As highways take punishment from 139.2 million registered vehicles (up from 1965's 91.7 million) contributing 1.3 trillion miles on 3,825 million miles of highways (compared to 1965's 888 billion miles on 3,690 million miles), the Department of Transportation is considering a new mode of funding for highways. Whether it will be a highway trust fund or transportation trust fund or use of more general sharing money, is theory at present. The Department seeks to prevent highways from becoming like the railroads.

PRO4 Diamond Shamrock

DACTHAL® herbicide Gentle on grass. Tough on weeds.

Dacthal prevents crabgrass. It's death on *Poa annua*. All in all, it drives 17 troublesome weeds right off the course!

Yet Dacthal is so gentle it can be used on nearly all turf grasses and 120 flowers and shrubs. Just follow label instructions.

Apply Dacthal in early spring to control most annual grasses and many annual broadleaf weeds. A second application in late summer knocks out late-germinating grasses such as *Poa annua*.

Gentle Dacthal. Wettable powder or 5% granules. It's one of the Diamond Shamrock Pro-4 Turf Care pesticides, which include DACONIL 2787® fungicide, DACAMINE® and DACONATE® postemergence herbicides . . . plus Dacthal preemergence herbicide.

Ask your turf chemicals supplier for Dacthal, or contact the Diamond Shamrock sales office nearest you.

Diamond Shamrock

AGRICULTURAL CHEMICALS DIVISION

SALES OFFICES: • 1100 Superior Ave., Cleveland, Ohio 44114 • 1401 W. Paces Ferry Rd. NW, Atlanta, Georgia 30327 • 1006 Main St., Houston, Texas 77002 • Commerce Plaza Building, 2015 Spring Rd., Oak Brook, Illinois 60521 • 617 Veterans Blvd., Redwood City, California 94063

Circle 159 on free information card

Field Burning Limits Threaten Seed Quality In Willamette Valley

The Willamette Valley of Oregon is a majestic place, spires of stately, sharpened pines, rolling hills and brightness of life around it. It is life, to the people who are there, the scenic spell about it and the living it returns to its people through its renown $65 million grass seed industry.

But as seed growers continue to sow their fields, they find their work becoming increasingly difficult, not from erratic climate or weather, or encroachments on their land, but rather outside pressure upon one most vital part of their industry — field burning.

From where the Oregon seed growers, suppliers and users sit, the view of open field burning is essential, but other organized forces in Oregon view it as more than a 'burning' issue. It has become a struggle that threatens to severely affect the state's dominance as a producer of exceptional turf seed. Here's why:

The Willamette Valley grows 217 million pounds of annual and perennial ryegrass annually, half of which could support over 3 million pounds of beef or 12 billion quarts of milk. Some 13 billion pounds of Orchardgrass and tall fescue grow in the state's rich soil. When combined with ryegrass, the seed could fluorish over 7,205 square miles of turf. It's enough seed for 70 percent of the market, and employs 7,000 to 10,000 persons. Field burning makes much of this possible.

Field burning helps because it reduces insects and rodents in seeds, dispatches trash and destroys diseases while retarding their regrowth. It also rids the fields of unmarketable and unprofitable straw, destroys about 95 percent of the weeds in the winter annual grass that would otherwise reemerge in greater numbers, and shocks plants into production for the next season.

Burning is economically necessary for seed quality control in a valley with great production potential, but it is the valley that started the fight.

It received widespread attention in the late 1960's with a series of climatological studies, according to Joseph P. Hennessey, Jr. and Charles D. Craig, authors of *The Field Burning Climatology of the Willamette Valley* for the Department of Atmospheric Sciences, Oregon State University.

One study by Holzworth (1971) featured seasonal statistics of field burning but lacked a temporal solution for the problem. Holzworth measured morning (urban) mixing heights, afternoon mixing heights, average surface wind speeds, and mean mixed layer precipitation. Although Hennessey and Craig's report notes the valley's frequent air inversions, atmospheric stagnation and greater susceptibility to urban air pollution, they cite Holzworth as giving estimates and possible overestimates of data. But the study caught public imagination and the message appeared to be 'end the burning.'

Resulting legislation in 1971 banning open field burning was repealed in 1975. In 1975, SB 311, a harsher manacle upon industry, was passed. The bill prescribes law and guidelines for phasing out burning in favor of field sanitizing by machine or other means, and uses restrictions, burning quotas, registrations, watchdog groups and task forces for enforcement even though burning is carefully controlled, not done during inversions and usually lasts only four to eight hours per day. Seed is usually burned only 12 days in Polk, Yamhill, Clackamas, Marion and Washington counties out of an approximate 70 day season. Since smoke management started in 1970, figures for visibility less than six miles in Eugene is well below five hours, according to information of the U.S. Department of Commerce. With this information, however, and increasing cuts into the numbers of fields for burning, the bill was passed.

- Under SB 311, as of July 1, 1975, all farmers intending to burn seed must first get a valid open field burning permit from the Department of Environmental Quality (DEQ) and a fire permit and validation number from the local fire permit issuing agency for a specific field on the day it is to burn.
- DEQ will offer the registra-

Farmer combining fescue for seed in Willamette Valley.

tion/application forms which are invalid until the grower pays his acreage fees and gets his validation number for each field on the burning day. Fees are $4 an acre, up from $3 in 1975 and will be $5.50 an acre in 1977 and $8 in 1978. These revenues fund the registration program, its records, and the state smoke management program. If a grower files too late and is to blame for his lateness, he could pay $1 an acre and must have his registration approved by DEQ. Other fines are levied for violations, water pollution or intentionally burning fields not approved for burning.

- Cereal grain crops may be burned only if the grower gives a signed statement unde. oath or an affirmation that the acreage for burning will follow with seed crops (other than cereal grains, hairy vetch or field pea crops) which require flame sanitation for proper cultivation.

- All growers, turf seed or cereal grain, must keep a copy of the burning permit at the burn site and keep it available for at least one year after issuance for possible inspection. All burning records should be kept this way.

- The DEQ will monitor burning and will not issue burning quotas once 195,000 acres (for 1976) have been burned.

- Allocations to growers will be given on first and second allocation process. First allocations are assigned according to the total acreage each grower has beyond 100 acres. A second allocation is awarded to each grower with over

100 registered acres based upon the grower's proportional share of the unallocated remainder of the 214,-500 acre grower allocation. Fire district allocations follow the sum of all first allocations applied to growers within the district and the proportional district share of the unallocated portion of the 195,000 total burnable acres.

- The Department may adjust allocation of the 195,000 burnable acres made to fire districts but cannot transfer allocations on one-in/one-out basis after the 195,000 acres are burned. No fire district may burn beyond its quota allocation.
- As DEQ sets the number of daily burning, no burning may be greater than its decree for the marginal day except if the quota is 50 acres or less. At this time, a permit may allow burning in one field if the field isn't over 100 acres and if no other permit is given that day. Fifty acres quota districts may not get 50 acre permits on two consecutive days.
- The burning season is from July 1 to October 31 and may begin at 9:30 a.m. PDT under marginal conditions but no open field burning is allowed one half hour before sunset or may continue later than one and one half hour after sunset. Fire chief or his deput may change these hours to aid air quality.
- Marginal burning is rated as follows: marginal Class N burning is limited to: North Valley: one basic quota may be issued; South Valley: one property area quota for priority area burning.
- Marginal S conditions: North Valley: one basic quota may be issued in concordance with the following permits jurisdiction: Aumsville, Drakes Crossing, Marion County District 1, Silverton, Stayton, Sublimity, and the Marion County portion of the Clackamas-Marion Area burning. No field may burn on the upwind side of any city, airport or highway within a priority area.
- Priority areas are:

—in or within three miles of the city limits of incorporated cities having population of 10,000 or greater;

Continues on page 14

Willamette Valley Suited For Grass Seed Culture

Oregon's Willamette Valley is the world's foremost producer of grass seed. Two important factors explain why — climatic conditions and soil. Fifty inches of rainfall during the winter and early spring, followed by dry summer months create ideal growing conditions on the heavy soils which are particularly well-suited for grass culture. Seed is produced from Oregon City in the north to Eugene in the south.

The Willamette Valley is the only area in the world where grass seed is grown commercially to such an extent as a primary crop. It contrasts to many areas where harvesting is dictated by favorable price.

The industry boosts the agricultural income of the state on the average of $60 million, with goods and services purchased and used in producing and distributing seed likely to exceed $500 million.

A minimum land requirement for an economically favorable operation to support a family unit is 800 acres, rented, leased or owned outright, with the price of land now varying from $600 to $900 an acre. This reflects about $300 to $500 higher an acre than 10 years ago. Machinery is also a heavy capital investment.

As for expenses, the cost of seed stock is minimal. Labor, facilities, equipment, fertilizer and other supplies are the major items, but farming without the right equipment to do the right work at the right time is risky business; economizing on fertilizer is faulty thrift.

Successful seed farmers try to schedule their operations five to seven years in advance. Bob Richardson at Willamette Seed & Grain in Shedd, Ore., adds: "Those who invest their time and money wisely can't economize on fertilizer or weed control and expect to realize maximum quality — the way to real profit."

Oregon's world-wide reputation for high quality grass seed is due primarily to a seed certification program. To have a crop variety entered in the program, a written request is submitted a year prior to certification time. The seed must also have some attributes which makes it merit certification, as well as being distinguishable from other varieties. One of the preliminary steps in producing certified seed is an application filed with the county agent 60 days before planting. Each crop has its own application showing a variety, field, township, range, section, quarter and a map of the location. A five-year field history of crops grown is also listed.

The 60 day provision allows for sprouting time after which fields are inspected for contaminating grasses. Evidence of such grasses dictates a certification turndown putting the crop into a commercial classification. Of the 120,000 acres inspected last year, 4,147 acres were rejected.

The heart of the certification program is the seed testing laboratory located at Oregon State University in Corvallis. It is the only lab in Oregon which can test for certification and is operated under the School of Agriculture with Ed Hardin, an OSU faculty member, directing lab operation. While the lab does not actually certify, test results indicate the decision. From precisely measured samples, experienced personnel, using powerful magnification, separate grass seeds, weed seeds and inert ingredients to determine the percentage of purity and germination — basic facts required for certification. The seed grower pays a flat fee per field for extension service field inspections and lab work. □

When your reputation is the turf you grow . . .

PLANT

Bonnieblue

Kentucky Bluegrass

Rich dark-green color over a long growing season. Good rhizome and tiller development. Low growth with excellent density even at moderately low mowing heights. Strong disease resistance. A sod with high strength that cuts easily and holds well.

That's Bonnieblue Kentucky bluegrass, and you can stake your reputation on it. We know because at E. F. Burlingham & Sons we value our 70-year reputation as seedsmen—and we're sold on the credentials of Bonnieblue. Credentials that include development of the variety through a special breeding project initiated at Rutgers University in 1962. Our tests and trials across the country on a continuous basis with Bonnieblue consistently ranking among the highest in overall turf quality. And now, the important steps we have taken to maintain genetically pure seed stock and painstaking production for plump, bright, high quality seed.

So, when your reputation is the turf you grow, stake it on the performance of Bonnieblue.

We do!

E. F. Burlingham & Sons, P.O. Box 217, Forest Grove, OR 97116. Phone: (503) 357-2141; Telex: 36-0274; Cable: Burlingham.

E. F. BURLINGHAM & SONS

Circle 112 on free information card

—areas within one mile of airports serving regularly scheduled airline flights;

—areas in or within three miles of city limits of Lebanon;

—areas west side of and within ¼ mile of these highways: U.S. Interstates 5, 99, 99E and 99W.

—areas on the south side of within ¼ mile of U.S. Highway 20 between Albany and Lebanon, Oregon Highway 228 from its junction south of Brownsville to its rail crossing at the community of Tulsa.

To help ease the watchdog effort, 'skywatch' planes were set up by the bill.

Although the bill says, regional air quality control authorities are forbidden to regulate burning or perennial grass seed crops, annual grass seed crops and grain crops, it provides for the Oregon Field Sanitation Committee to replace the Field Burning Committee. The five member group, seated for four year terms, would represent two members of five nominated by the Oregon Seed Council, two representing the public appointed by the director of the Department and a fifth person appointed by the governor.

Its duties and powers would revolve about field burning, its alternatives, studies by outside agencies, contracts and establishment of air emission standards for alternatives. DEQ would oversee the committee enforce its rules and help fire districts with burning regulations. The bill also establishes two inspectors for spot checking fields during the burning season and stations a field burning program manager in Eugene, Ore.

Number of acres is also set — SB 311 allows not more than 235,000 acres to be burned in 1975; 195,000 in 1976 and 95,000 in 1977. In 1978 and each year later, the commission will study the bill's factors and may allow burning of no more than 50,000 acres.

Of 280,183 acres approved for burning, only 186,260 were burned in 1975, the lowest number since 1968. This is 82 percent of the South Valley and 76 percent of the North Valley, due to rain, wind direction and other atmospheric factors. The later the season, the fewer the proper burning days.

Mechanical sanitizer, one alternative to open field burning, shown in operation. Several kinks must be worked out before it becomes a practical replacement.

There were 761 complaints of smoke in 1975, according to DEQ statistics, down from 1198 in 1974. The all time high was 5142 in 1968 and low of 144 in 1967, but less burning failed to improve air, DEX noted, and accounted for only 20 percent of all smoky days. Much of what Eugene complains about is actually skag burning and city pollution, not field burnings.

By comparison on an annual basis, field burning in 1973 produced 1,050 tons of nitrogen oxides a year, no sulfur oxide tons and 8,404 tons of particulates while slash burning produced 2,154 tons of nitrogen oxides, no tons of sulfur oxides and 9,705 tons of particulates. Motor vehicles emissions yielded 70,179 tons of nitrogen oxides per year, 2,499 tons of sulfur oxides and 4,122 tons of particulates.

Regardless of the gains the bill's supporters have made for their cause, SB 311 is taking a severe toll upon Oregon's home-based industry with a yet unforeseen effect upon the state's precarious economy, high unemployment and its relationship with the foreign market. The situation is bringing in greater competition from the outside, with new problems for worldwide grass seed.

Denmark is a heavy competitor, levying a steadier business in orchardgrass and perennial ryegrass for U.S. customers. Canada deals in a fine fescue and red creeping which has concerned Oregon business annually. so does England, New Zealand, Poland, Argentina, Chile and Holland.

As Japan concentrates upon producing finer strains of turfgrasses, it is estimated that 35 percent of all forage grasses, mainly ryegrasses and orchardgrass, will come from Japan by 1980.

Economically, the restrictions on open field burning costs Oregon $22,884,000 at the farm gate, a 35 percent decrease in 1973 markets. Only 209,000 or 285,000 acres produced seed with added burdens of till and no-till methods. No-till of ryegrass costs $15.74 a hundred acres but tilling is $18.26. Orchardgrass alone costs $25 a hundred pounds but in Denmark alone it receives a $12.50 subsidy per hundred pound from the European Economic Community Government. Oregon growers pay a tax to burn, a situation that the Weed Council believes will force them to import inferior Danish orchardgrass by 1977.

Europe tends to lose, too, since some countries send their seeds to

Continues on page 44

Is your new bluegrass plagued with weeds?

FYLKING IS PURE.

The famous Swedish beauty, Fylking Kentucky bluegrass seed contains no annual bluegrass *(Poa annua)*, bentgrass or short-awned foxtail. Strict controls and countless inspections guarantee the physical purity and genetically true seed typical of Fylking Kentucky bluegrass. These procedures make your seed dollars go farther. Fylking is one of the lowest priced elite bluegrass seeds on the market.

Fylking, used as the backbone of your seed mix, will produce a lawn that will make you proud. Fast germination and growth, development of a dense, compact rhizome and root system, make Fylking a natural choice. Low-growing, low-mowing (low as 1/2 inch), more disease, drought, smog and traffic resistant. Fylking is persistent, brilliant green from early spring to late fall.

For a purely beautiful, tough turf, specify Fylking Kentucky bluegrass. Available at your local wholesale seed or sod distributor.

FYLKING KENTUCKY BLUEGRASS

U.S. Plant Patent 2887

Another fine quality product of Jacklin Seed Company.

Fylking plants started from "original" breeder's seed in sterile greenhouse media are transplanted to fumigated soil in isolated breeders block for seed increase.

Individually harvested, progeny seed from each original "mother plant" is cross tested for genetic purity. Physical and genetic purity are carefully maintained by constant evaluation, chemical spot roguing and physical removal.

Circle 102 on free information card

WTT Report on

TURF HERBICIDES

WEEDS TREES & TURF is following its recent turf fungicide report with a detailed study of major manufacturers' turf herbicides. Those contacted were asked to identify their products and what weeds they can control. Their responses were:

J. & L. Adikes, Inc., manufactures two turf herbicides suitable for controlling a wide range of turf weeds. Their Gro-Well crabgrass and broadleaf weed killer can control crabgrass, chickweed and a variety of broadleaf lawn weeds such as dandelion, plantain, knotweed, spotted spurge, pennywort and purslane.

It should be used with care on bents, fescues and clover since it could cause temporary discoloration. This product is not designed for use on St. Augustine, carpet or centipede grasses or on bent golf greens.

Its active ingredients are 8 percent dodecylammonium methanearsonate; 8 percent octylammonium methanearsonate and 5.44 percent octylamine salt of 2,4-dichlorophenoxyacetic acid.

The company's Gro-Well dandelion and broadleaf weed killer can control bluegrass, ryegrass, fescue, Bermuda and Zoysia lawns. Its special targets are knotweed, chickweed, spotted spurge, henbit, black medic, sheep sorrel, bedstraw, buckhorn, chicory, dock, ground ivy, heal-all, lambsquarters, lespedeza, mallow, morning glory, peppergrass, pigweed, plantains, poison ivy, poison oak, purslane, ragweed, shepherd's purse, speedwell, spurge, wild carrot, wild garlic, wild lettuce, wild onion and yarrow.

It is not recommended for use on centipede and St. Augustine grass lawns and shouldn't be applied to dichondra, carpetgrass or lawns with desirable bentgrass or clovers.

Its active ingredients are: 3.66 percent dimethylamine salt of 2-(2-methyl-4-chlorophenoxy) propionic acid; 8.07 percent dimethylamine salt of 2,4-dichlorophenoxyacetic acid; .84 percent dimethylamine salt of dicamba (3,6-dichloro-o-anisic acid) and .11 percent dimethylamine salt of related compounds.

Rhodia, Inc., Monmouth Junction, N.J., markets five herbicides. Chipco Buctril can control blue mustard, groundsel, lambsquarters and tarweed.

Chemically, it's 33.8 percent octanoic acid ester of bromoxynil (3,5-dibromo-4-hydroxydenzonitrile), a broadleaf herbicide.

Chipco Turf Herbicide "D" works against buckhorn, and other plantains, curled dock, dandelion, red sorrel, wild garlic and wild onions.

Its active chemical component is 49.8 percent dimethylamine salt of 2,4-dichlorophenoxyacetic acid.

The company's Chipco Turf Herbicide MCPP works to control surface creeping broadleaf weeds such as common chickweed, mouse-ear chickweed, red clover, white clover, ground ivy, stitchwort and knotweed.

Its active ingredient is 32.8 percent diethanolamine salt of 2-(2-methyl-4-chlorophenoxy) propionic acid.

Chipco Turf Kleen combines MCPP and 2,4-D to control a wider range of weeds than either product. These include curly dock, dandelion, buckhorn and common chickweed.

Chipco Crab Kleen can control grassy weeds as dalligrass, sandbur, bahiagrass, nutsedge, chickweed and wood sorrel.

Its chemically active ingredient is 21.76 percent disodium methanearsonate.

DuPont, Wilmington, Del., manufactures Tupersan Siduron weed killer for use on annual weed grasses. It is designed for pre-emergence control of annual weed grasses such as both smooth and hairy crabgrass, foxtail and barnyardgrass. Clover, annual bluegrass (*Poa annua*) and most broadleaf weeds are not controlled by Tupersan.

Its chemical makeup of active ingredient is 50 percent siduron (1-2-methylcyclohexyl)-3-phenylurea).

Uniroyal Chemical, Nauagatuck, Conn. produces Slo-Gro, a growth retardant which controls annual bluegrass by reducing reseeding of *Poa annua*.

Active component is 58 percent dimethanolamine salt of 6-hydrooxy-3-(2H)-pyridiazione.

Diamond Shamrock, Cleveland, Ohio, markets a number of turf herbicides for pre-emerging weeds. Its Dachtal herbicide can control both smooth and large crabgrass, *Poa annua*, goosegrass, carpetweed, common chickeweed, johnsongrass (from seed), lambsquarters, lovegrass, purslane, and Veronica (creeping speedwell).

It is not recommended for putting greens or bentgrasses mowed at putting green height.

Its chemically active ingredient is 75 percent dimethyl tetrachloroterephthalate.

Daconate 6 is manufactured for use in selective control of bahiagrass, dalligrass, barnyardgrass and grassy weeds like chickweed, nutsedge, sandbur and wood sorrel. It also controls barnyard cocklebur, goosegrass, and johnsongrass.

Daconate 6 may injure bent-

continued on page 20

Maintaining an effective turf-care program often becomes a contest between you, nature and the budget. And professional turf-care managers know the value of having top quality, precision-built equipment in their line-up.

That's why we build Ryan turf equipment with performance, dependability, and economy. Because, after all, good turf-care isn't a game. It's a profession.

For more information write for your free catalog today.

1 **Greensaire II:*** Second generation of the Ryan coring aerator. Removes cores on 2" centers down to 3" depth.

2 **Core Processor:*** Attaches to Greensaire II. Processes cores, picks up plant material and returns soil to green.

3 **Spikeaire:*** Disc spiker for aeration.

4 **Mataway:*** Heavy-duty deep slicer and disc spiker.

5 **Ren-O-Thin:*** Removes thatch, grooves for seed, pulverizes aeration cores.

6 **Turf Minute-Miser:*** Personnel transportation and towing ball pickers, Greensweep, utility trailer.

7 **Greensweep:*** Picks up cores, thatch, debris from greens, turf and pavement.

8 **Spread-rite:*** Top dresser, fertilizer spreader. Handles sand, too.

9 **Renovaire.** Turf aerator for large, contoured areas. Interchangeable tines for coring, slicing, open spoon aerating.

10 **Tracaire.** Three-point hitch aerator.

11 **Pro-Edge:*** Professional edger.

12 **Rollaire:*** All-purpose roller.

13 **Sod Cutters:*** Self-propelled heavy-duty and junior models.

14 **Lawnaire:*** Home lawn aerator.

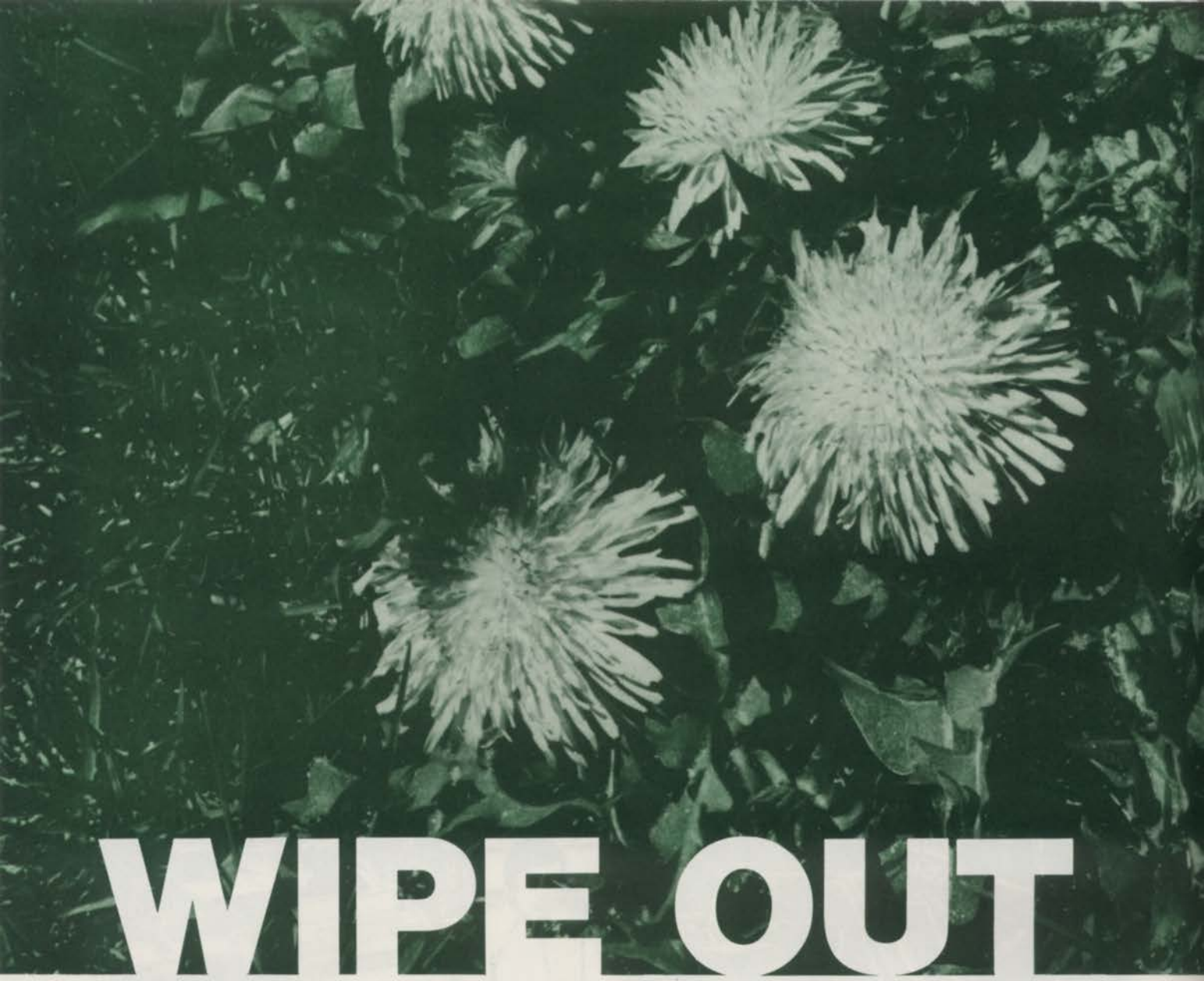
*Self-powered and/or propelled.

RYAN
TURF-CARE
EQUIPMENT

OMC-Lincoln, a Division of
Outboard Marine Corporation
6530 Cushman Drive,
P.O. Box 82409,
Lincoln, Nebraska 68501

The turf-care line-up.

Circle 140 on free information card



WIPE OUT WITH BANVEL® 4S...

Banvel herbicides are broadleaf weed "specialists" designed for professional turf programs.

As a professional turf man you have a reputation to be proud of. And, rightly so! Your skill, knowledge and effort shows in the beauty and quality of your turf. So why take chances with understrength herbicides? Herbicides that get some broadleaf weeds but leave you with repeated deep-rooted problems—such as dandelions and plantain. Banvel 4S and Banvel +2,4D control all the major broadleaf weeds, and most of the time with just one application. Check the chart and compare your weed problems with the herbicides available.

Here's why Banvel herbicides are the professionals' choice for weed control

- When used as directed Banvel will not harm trees, ornamentals or grass—it just eliminates weeds.
- No season restrictions. Lay down Banvel from early spring to late fall—all through the growing season.
- Rain will not affect Banvel. It keeps working because it translocates—penetrates leaves and is absorbed through roots to attack every part of the weed.
- Banvel is not a soil sterilant. There is no residual reaction from Banvel as it is broken down in the soil by bacterial action. It is biodegradable.
- No special spraying equipment necessary. It is easy to clean out of equipment after use.
- Mixes readily with hard or soft water.
- Easily stored through winter months without losing potency.

WEEDS

BANVEL®+2,4D

herbicides...

Herbicide and Broadleaf Weed Susceptibility

Weed	2,4-D	Silvex	Meco-prop	Dicamba
Bindweed	S	S-I	S-I	S
Bittercress	S	S-I	S-I	S
Black medic	R	S-I	I	S
Buttercup	S-I	I	I	S
Carpetweed	S	S	S	S
Chickweed,				
common	R	S	S-I	S
Mouse-ear	I-R	S	S-I	S
Chicory	S	S	S	S
Clover, crimson	S	S	S	S
Hop	I	S	S	S
White	I	S	S	S
Cranesbill	S	S-I	S-I	S
Daisy, oxeye	I	I	I	I
Dandelion	S	S	S	S
Dock	I	I-R	I-R	S
Dogfennel	I	S	I	S
Garlic, wild	S-I	R	R	S-I
Ground ivy	I-R	S-I	I	S-I
Hawkweed	S-I	R	R	S-I
Henbit	I	S	I	S
Knapweed, spotted	I	S-I	I	S
Knawel	R	S	I	S
Knotweed	R	I	I	S
Lambsquarter	S	S	S	S
Lespedeza	I-R	S	S	S
Mugwort	I	I-R	I-R	S-I
Mustards	S	S-I	I	S
Nutsedge	I	R	R	R
Onion, wild	I	R	R	S-I
Ornamental plants	S-I	S-I	S-I	S
Woodsorrel	R	S	R	I
Pennycress	S	S-I	I	S
Pepperweed	S	S-I	S-I	S
Pigweed	S	S	S	S
Plantains	S	I	I-R	I-R
Poison ivy	I	S	R	S-I
Pony foot	S	I	I	S-I
Prostrate spurge	I	I	I	S
Purslane	I	S-I	R	S
Red sorrel	R	I	R	S
Shepherdspurse	S	S	S-I	S
Speedwell	I-R	I-R	I-R	I-R
Spotted spurge	I-R	I	S-I	S-I
Thistle, musk, curl	S	I	I	S
Thistle, Canada	I	I	I	S
Vegetables	S	S	S	S
Wild carrot	S	S-I	S-I	S
Wild strawberry	R	I	R	S-I
Yarrow	I	I-R	I-R	S
Yellow rocket	S-I	I	I	S-I

S = weed susceptible; I = intermediate, good control at times with high rates, sometimes poor, usually require more than one treatment; R = resistant weeds in most instances.

Chart reprinted by permission, S. Wayne Bingham, Ph. D.

"Two" is better!

Some weeds simply aren't affected by single herbicide treatment. But Banvel +2,4D has an "additive effect" in that the two herbicides get weeds that one alone just weakens.

Banvel herbicides—products for professional turf men

Velsicol®

Velsicol Chemical Corporation
341 East Ohio Street • Chicago, Ill. 60611

Circle 124 on free information card

© Velsicol Chemical Corporation, 1976

WTT-876

grasses and fescues and is not designed for application on St. Augustine grass, carpetgrass, centipedegrass or dichondra lawns.

Its active ingredient is 48.35 percent monosodium methanearsonate.

Dacamine can control annual chickweed, broadleaf plantain, buckhorn, buttercup, bull thistle, hoary cress, knotweed, leafy spurge, morning glory, milkweed, mustard, Canada thistle, carpetweed, chickory, curly dock, dandelion, field bindweed, ground ivy, henbit, puncturevine, purslane, ragweed, shepherd's purse, wild carrot, wild garlic and wild onion.

Active ingredients are 33 percent N-oleyl-1, 3-propylene-diamine salt of 2,4-dichlorophenoxyacetic acid.

W. A. Cleary, Somerset, N.J., have several postemergent herbicides for turf. AMA plus 2,4-D can control crabgrass, dandelion, plantain, chickweed, silver crabgrass, dalligrass and knotweed. It may cause temporary discoloration of bents, fescues and clovers and should not be used on St. Augustine, carpet or centipede grasses or bent golf courses.

Super Methar can control dalligrass and crabgrasses but may discolor fescue and bentgrasses and should not be used on St. Augustine, carpet or centipede grasses.

Active ingredients are 8 percent octylammonium methanearsonate; 8 percent dodecylammonium methanearsonate and 5.44 percent octylammonium salt of 2,4-D dichloropheonxyacetic acid.

Methar 30 is marketed to control crabgrass and dalligrass and should not be applied to St. Augustine, carpet or centipede grasses. It may discolor fescue and bentgrass areas.

It is actively 18.90 percent disodium methanearsonate anhydrous.

Methar 80 can control crabgrass but may discolor fescue and bentgrass. It is not designed for St. Augustine, carpet or centipede grasses.

Chemically, it is 50 percent disodium methanearsonate.

Cleary's MCPP can control chickweed (common and mouse-ear chickweed), knotweed, clover and common plantain.

It is 25.9 percent potassium salt of 2(2-methyl-4-chlorophenoxy) propionic acid (MCPP).

Cleary's MCPP-2,4-D can control broadleaves. It can control dandelion, clover, common chickweed, plantain, pigweed, ragweed, lambsquarters and is less successful on knotweed, black medic, English daisy, dock, purslane, wood sorrel and mallow.

The herbicide is not intended for uses on home lawns or golf greens or tees.

Active chemical components are 31 percent diethanolamine salt of 2-(2-methyl-4-chlorophenoxy) propionic acid and 15.35 percent diethanolamine salt of 2,4-dichlorophenoxyacetic acid.

Lawn Medic, Rochester, N.Y. has developed three turf herbicides. Crabgrass Preventer 1 can control smooth and hairy crabgrasses, foxtail and barnyardgrass. Its use on other bentgrass or Bermudagrass may damage turf or golf greens. This product will not control weeds on *Poa annua,* clover or most broadleaf weeds.

Its active ingredient, 7.66 percent, is siduron (1-(2-methylcyclohexyl)-3-phenylurea.

Crabgrass Preventer 2 can control carpetweed, common chickweed, fall panicum, Florida pusley, green foxtail, hairy crabgrass, johnsongrass (from seed), lovegrass, purslane, smooth crabgrass, Texas millet, witch grass, yellow foxtail, and lambsquarters. It should not be used on cohansy, Toronto bents or dichondra.

Its 6.86 percent concentration is its active ingredient, dimethyl tetrachloroterephthalate.

"Liquid" crabgrass killer can control crabgrass in its two and three leaf stage and as branched crabgrass. It may injure fescue and bentgrasses and shouldn't be used on St. Augustine grass.

Its active ingredient is 18.90 percent disodium methanearsonate anhydrous. **Rohm and Haas,** Philadelphia, manufactures Kerb 50-W, a herbicide which can control *Poa annua* in Bermudagrass. It can also control perennial bluegrass, barnyardgrass, canarygrass, cheatgrass, crabgrass, downy brome, fall panicum, foxtail, goosegrass, lovegrass, orchardgrass, quackgrass, ryegrass, volunteer barley, volunteer oats, volunteer rye, volunteer wheat, annual morning glory, carpetweed, henbit, knotweed, lambsquarter, London rocket, mustards, nettleleaf goosefoot, nettles, nightshades, purslane, shepherd's purse, smartweeds, and volunteer tomatoes. Kerb will not work on nutgrass (sedges), Bermudagrass, johnsongrass, or such members of the composite family as dandelion, pineapple weed, dog fennel, galinsoga, groundsol, wild lettuce, sowthistle, clover and black medic.

ProTurf of **Scotts,** Marysville, Ohio, produces a wide spectrum of turf herbicides. ProTurf fertilizer with weedgrass preventer can control sprouting grassy weeds of crabgrass, foxtail, goosegrass and *Poa annua* and sprouting broadleaf weeds of lambsquarters, pigweed, shepherd's purse and henbit. It works best on all turfgrasses and dichondra but is not recommended for use on turf areas having 50 percent *Poa annua* or more. Its fertilizer analysis is 26-0-12 (nitrogen sources — 17.3 percent water soluble from urea and methylene ureas, 8.7 percent water insoluble from methylene ureas). Its herbicide is bensulide.

ProTurf fertilizer plus dicot weed control is effective against black medic, buckhorn, buttonweed, chickweed, clover, cudweed, curly dock, shepherd's purse, yellow rocket, ground ivy, heal-all, knotweed, dandelion, filaree, pepperweed, plantain, purslane, lambsquarter, matchweed, English daisy, horseweed, pennywort, pigweed, prickly lettuce, ragweed and sheep sorrel. It is not made to use on St. Augustine, carpetgrass, dichondra or on putting greens. Fertilizer analysis is 30-50-3 (nitrogen sources — 1.2 percent from ammoniated phosphate, 18.8 percent soluble from urea and methylene ureas, 10 percent water insoluble from methylene ureas). Other components are phosphorus from am-

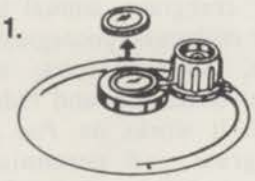
BRANDT CAP CUTTER

THE-ALL-IN-ONE Chemical Can Opener

The Brandt Cap Cutter easily opens a five gallon drum of chemical as it cuts a circular opening in the plastic spout.

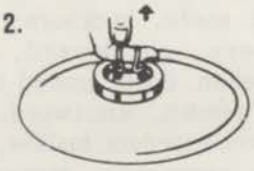
WE CAN Cut It . . .

1.



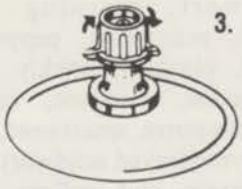
Use the uniquely designed hand bar built into the bottom of the cap to pry off the chemical seal.

2.



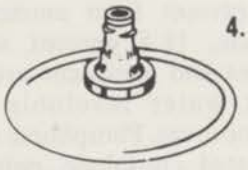
Pull up the plastic spout and remove the drum cap.

3.



As you twist on your Brandt Cap cutter, you are cutting an opening into the plastic spout, eliminating the need for knives, screwdrivers and other sharp instruments.

4.



RESULT—A circular opening with no jagged edges - ready to pour - in 1/3 of the time.

and so can YOU

Distributorships Available

PAT. PEND.

only **$5.95**

Call Crown Today

& $U¢¢EED

Toll Free

1-800-325-3316

COMPLETE & MAIL WITH CHECK OR M.O.

YES I'd like to order _____ Brandt Cap Cutters at $5.95 each.
Check or Money Order is enclosed. (Allow one week for delivery.)

COMPANY NAME _____

ADDRESS _____

CITY & STATE _____ ZIP _____

Mail to — CROWN CHEMICALS - 4235 Duncan Ave. - St. Louis, Missouri 63110

Circle 133 on free information card

moniated phosphate, potassium from potassium sulfate. Its active herbicide is dicamba and 2,4-D.

ProTurf fertilizer plus dicot weed control II is recommended for use against aster, bittercress, black medic, buckhorn, buttonweed, chickweed, chicory, cinquefoil, white clover, cudweed, curly dock, daisy fleabane, dandelion, English daisy, evening primrose, filaree, galinsoga, ground ivy, heal-all, henbit, knotweed (seedling), lambsquarters, lippia (matchweed), moneywort, morning glory, mustard, pennywort, pepperweed, pigweed, plantain, prickly lettuce, puncturevine, purslane, ragweed, shepherd's purse, smartweed, stitchwort, thyme-leaved sandwort, vetch, whitlowgrass and yellow rocket.

Only creeping bentgrasses, putting greens, St. Augustine, carpetgrass and dichondra are not recommended.

Its chemical fertilizer composition is 30-5-3 with nitrogen sources of 1.2 percent from ammoniated phosphate, 18.8 percent soluble from urea and methylene ureas, 10 percent water insoluble from methylene ureas. Phosphorus from a ammoniated phosphate, potassium from potassium phosphate. Its herbicide is 2,4-D and MCPP.

ProTurf starter fertilizer with pre-emergence weed control can control sprouting of crabgrass, foxtail and barnyardgrass and is used for seeding of all grasses except penncross, seaside, astoria, C-1, C-7, C-19, and nemesilla. It is not recommended for use on Bermudagrass or zoysia and will not control established grassy weeds.

Its fertilizer analysis is 16-21-5 and nitrogen sources of 4.9 percent ammonical from ammoniated phosphate, 7.4 percent water soluble from urea and methylene ureas, 3.7 percent water insoluble from methylene ureas. It also contains phosphorus from ammoniated phosphate, and potassium from muriate of potash. Its herbicide is siduron.

ProTurf *Poa annua* control plus fertilizer can control *Poa annua*, bluegrass and bentgrass and is designed for use on Bermudagrass. It may discolor golf greens, however, if applied before severe cold or freezing.

It uses the herbicide pronamide (kerb) and has a fertilizer analysis of 27-0-13 with nitrogen sources 18 percent water soluble from urea and methylene ureas, 9 percent water insoluble from methylene ureas.

ProTurf weedgrass preventer controls sprouting grass weeds such as *Poa annua*, barnyardgrass, crabgrass, goosegrass and foxtail. It is not designed for use on turf areas having 50 percent *Poa annua* or more and contain the active ingredient bensulide.

ProTurf Weedicide II can control the weeds black medic, buckhorn, bur clover, chickweed, clover, cud-weed, daisy fleabane, dandelion, dollarweed, English daisy, filaree, ground ivy, heal-all, knotweed (seedling), lambsquarters, pepperweed, pigweed, plantain, purslane, ragweed, shepherd's purse, yellow rocket.

It is mixed to use on all cool season grasses and Bermuda and bahia but should not be used on creeping bentgrasses, St. Augustinegrasses, carpetgrass, dichonda, lippia or similar ground covers.

Its active ingredients are 2,4-D and MCPP.

ProTurf K-O-G- weed control is effective on weeds black medic, common chickweed, mouse-ear chickweed, clover, cudweed, curly dock, ground ivy, horseweed, knotweed, sheep sorrel, Canada thistle, wild garlic, wild onion and yarrow. Application is approved for all turfgrasses except St. Augustine and dichondra.

Dicamba is its active ingredient.

ProTurf monocot weed control can control barnyardgrass, crabgrass, foxtail, witchgrass, goosegrass (in its immature stage up to the size of a silver dollar) and paspalum (such as dalligrass, except in California). Use on St. Augustine, centipede, bahia or carpetgrass for methods other than non-selectice spot treatment are not suggested.

The product uses DSMA (disodium methanearsonate) as its active ingredient.

Mallinckrodt, Inc., St. Louis, has four turf herbicides. Po-San can control *Poa annua* while retarding growth of chickweed, dandelion, clover and Veronica, and is used in non-crop areas.

Its active ingredients are 8.5 percent methyl 2-chloro-9-hydroxyfluorene-9-carboxylate; 2.3 percent methyl 9-hydroxyfluroene-9-carboxylate, and 1.7 percent methyl 2, 7-dichloro-9-hydroxyfluorene-9-carboxylate, in one solution and 22 percent diethanolamine salt of 6-hydroxy-3-(2H)-pyridazione.

Pre-San can control smooth and hairy crabgrass, annual bluegrass, silver crabgrass (goosegrass), watergrass, lambsquarters, sheperd's purse, deadnettle and redroot pigweed. It works on *Poa annua* in bentgrass and perennial grass, clover and dichondra turf.

Active ingredients are 45 percent s-(0,0-disopropyl phosphorodith-ioate) ester of N-(2-mercaptoethyl) benzenesulfonamide.

Trex-San can control bedstraw, black medic, buckhorn, burdock, chicory, checkweed, clover, dandelion, dock, ground ivy, heal-all, hembit, knotweed, lambsquarters, lespedeza, mallow, morning glory, peppergrass, pigweed, plantains, poison ivy, poison oak, purslane, ragweed; sheep sorrel, shepherd's purse, speedwell, spurge, thistle, wild carrot, wild garlic, wild lettuce, wild onion, and yarrow.

The herbicide may injure centipede, dichondra, and St. Augustine grass and will harm clover.

Active ingredients are 32.07 percent dimethylamine salt of 2,4-dicholorophenoxyacetic acid, ·16.12 percent dimethylamine salt of 2-(2-methyl-r-cholorophenoxy) propionic acid, 4.04 percent dimethylamine salt of dicamba (3,6-dichloro-o-anistic acid) and .05 percent dimethylamine salts of related compounds.

Trex-San Bent can control bedstraw, black medic, buckhorn, chicory, chickweed, clover, dandelion, dock, ground ivy, heal-all, henbit, knotweed, lambsquarter, lespedeza, mallow, morning glory, peppergrass, pigweed,

There was no sleeping on the job in the creation of a MAN MADE bluegrass!

SOMEBODY STAYED UP NIGHTS TO PRODUCE

Adelphi
KENTUCKY BLUEGRASS

RATED OUTSTANDING for overall performance in 10 years of testing at Rutgers University

Adelphi Kentucky Bluegrass is, truly, the product of many sleepless nights. The nature of bluegrass is such that hybridization can be achieved ONLY AT NIGHT and, there's no telling what time of night will be the right time.

So, aside from expertise and dedication, many patient night hours went into mating the parents of Adelphi. The result... ADELPHI KENTUCKY BLUEGRASS (U.S. Plant Patent No. 3150)... was well worth it.

ADELPHI, the first marketed, "Man-Made" Kentucky bluegrass has proven itself... with outstanding overall performance ratings in tests against as many as 60 new varieties... in New Jersey, Ohio, Michigan, Tennessee, Colorado, Rhode Island, Illinois and Washington.

ADELPHI is becoming a favorite of professional turfmen and home gardeners as well. For good looking and natural, richer, darker green color throughout the growing season... excellent density ... good disease resistance and tolerance to moderately close mowing, it's "Man-Made" ADELPHI... A FIRST IN TURF.

ADELPHI has been chosen by the Plant Variety Protection Office, U.S.D.A., as A STANDARD FOR DARK GREEN COLOR to which all bluegrasses applying for plant protection will be compared for color classification.

(Use of this statement does not indicate any approval or recommendation of Adelphi by the U.S.D.A.)

Try it. This grass shouldn't give YOU sleepless nights!

For Information, contact:

J & L ADIKES, Inc.
Jamaica, N.Y. 11423

NORTHRUP, KING & CO., Inc.
Minneapolis, Minn. 55413

JONATHAN GREEN & SONS
Farmingdale, N.J. 07727

VAUGHAN-JACKLIN CORP.
Bound Brook, N.J. 08805 • Downers Grove, Ill. 60515

Canadian Inquiries: **National-NK Seeds Ltd.**, Box 485, Kitchener, Ont. • **Rothwell Seeds Ltd.**, Box 511, Lindsay, Ont.
Other International Inquiries: **Northrup, King & Co., Inc.**, Minneapolis, Minn. 55413

Circle 137 on free information card

plantains, poison ivy, poison oak, purslane, ragweed, sheep sorrel, shepherd's purse, speedwell, spurge, wild carrot, wild garlic, wild onion, and yarrow.

Damage may result if applied to centipede, St. Augustine, or clover.

Active ingredients are 6.590 percent dimethylamine salt of 2,4-dicholorophyenoyacetic acid, 19.870 percent dimethylsamine salt of 2-(2-methyl-4-chlorophenoxy) propionic acid, 2.636 percent dimethylamine salt of dicamba (3,6-dichloro-o-anisic acid).

Dow Chemical U.S.A., Midland, Mich., manufactures five turf herbicides. Esteron 6E can control such weeds as beggarticks, bitterweeds, Texas blueweed, broomweed, wild buckwheat, burdock, carpetweed, catnip, chamise, chicory, cocklebur, cornflower, coyotebrush, croton, dandelion, docks, dogsfennel, elderberry, fanweed, galinsoga, wild garlic, goatsbeard, halogeton, wild hemp, jewelweed, jimsonweed, kochia, lambsquarters, bigbend loco, Venice mallow, manzanita, marshelder, milkvetch, annual morning glory, mustards, nettles, wild onion, pennycress, field pepperweed, pigweed, plantains, poorhoe, rabbitbrush, wild radish, ragweed, wild rape, redstem, coastal sage, big sagebrush, sand sagebrush, salsify, sand shinnery oak, shepherd's purse, sicklepod, smartweed, bitter sneezeweed, annual sowthistle, spanishneedles, sumac, sunflower, sweet clover, tansymustard, tansyragwort, bull thistle, musk thistle, Russian thistle, tumbleweed, velvetleaf, vervains, vetch, water plantain, willow, witchweed, wormwood, yellow rocket and yellow starthistle.

It is not designed for use on golf greens dichondra or other broadleaf herbaceous ground covers nor creeping grasses as bent and St. Augustine grass unless used for spot treating.

Its active ingredient is 94.4 percent 2,4-dichlorophenoxyacetic acid, isoactyl esters.

Esteron 99 is recommended for control of beggarticks, bitterweed, Texas blueweed, broomweed, buckbrush, wild buckwheat, burdock, carpetweed, catnip, chamise, chicory, cocklebur, coffeeweed, cornflower, croton, dandelion, docks, dogfennel, elderberry, fanweed, galinsoga, wild garlic, goatsbeard, halogeton, wild hemp, jewelweed, jimsonweed, kochia, lambsquarter, bigbend loco, Venice mallow, manzanita, marshelder, milkvetch, annual morning glory, mustards, nettles, wild onions, pennycress, field pepperweed, pigweed, plantains, poorjoe, rabbitbrush, wild radish, ragweed, wild rape, redstem, coastal sage, big sagebrush, sand sagebrush, salsify, sand shinnery oak, shepherd's purse, sicklepod, smartweed, bitter sneezeweed, annual sowthistle, spanishneedles, sumac, sunflower, sweetclover, tansymustard, tansyragwort, bull thistle, musk thistle, Russian thistle, tumbleweed, velvetleaf, vetch, water plantain, willow, witchweed, wormwood, yellow rocket and yellow starthistle.

This product is not for use on golf greens, dichondra or other broadleaf herbaceous ground covers or creeping grasses or St. Augustine grass unless it is used for spot treating.

Chemically, its active ingredient, 41 percent, is 2,4-dichlorophynoxyacetic acid, propylene glycol butyl ether esters.

Formula 40 is designed to control bitterweed, brooomweed, burdock, carpetweed, wild carrot, chicory, cocklebur, coffeeweed, croton, dandelion, dock, flixweed, galinsoga, wild hemp, jimsonweed, kochia, lambsquarters, bigbend loco, lupines, Venice mallow, marsheilder, annual morning glory, mustards, pennycress, pennywort, pennwort, pepperweed, pigweed, plantains, poorjoe, Florida pusley, wild radish, common ragweed, wild rape, yellow rocket, shepherd's purse, sicklepod, smartweed, bitter sneezeweed, annual sowthistle, spanishneedles, sunflower, sweetclover, tansymustard, bull thistle, musk thistle, Russian thistle, tumbleweed, velvetleaf, vetch, water plantain, witchweed and wormwood.

The herbicide should not be applied to dichondra or other herbaceous ground covers or creeping grasses like bent except for spot treatments.

Its active ingredient is 59.7 percent alkanolamine salts of the ethanol and isopropanol series of 2,4-dichlorophenoxyacetic acid. Its 2,4-dichlorophenoxyacetic acid equivalent is 38.6 percent.

Kuron is a herbicide which can control bitterweed, black medic, broomweed, burdock, buttercup, croton, chickweed, dalmation toadflax, dandelion, dogfennel, groundcherry, kochia, lupine, mashelder, plantain, ragweed and spurge.

It should not be applied to stoloniferous grasses such as bent, Bermuda, St. Augustine, carpet and centipede or dichondra.

Its active ingredient is 69.2 percent silvex, 2-(2,4,5-trichlorophenoxy) propionic acid, propylene glycol, and butyl ether esters.

Dowfume MC-2 can control quackgrass, nutgrass, johnsongrass, garlic and wild onion.

Its active ingredients are 98 percent methyl bromide, and 2 percent chloropicrin.

Ansul, Marinette, Wisc., has two turf herbicides on the market. Ansar 529 H.C. can selectively control such weeds as dallisgrass, sandbur, bahiagrass, nutsedge, crabgrass, chickweed and woodworrel.

It is a high concentrate MSMA liquid plus surfactant.

Phytar 560 is non-selective and is used as a 'liquid edger' and for lawn renovation.

It is made of sodium cacodylate and cacodylic acid liquid plus surfactant.

Ortho of Chevron Chemical Company, San Francisco, Calif., markets Ortho Paraquat CL which can control annual broadleaved weeds and grasses like burclover, chickweed, filaree, groundsel, nettle, pigweed, plantain, puncturevine, purslane, red clover, shepherd's purse thistle, wild mustard, wild radish, wild oats, bluegrass, cheat grass, crabgrass and top kill and suppression of perennial weeds such as Bermudagrass, johnsongrass and morning glory.

Continues on page 36

For ad on following page circle 126 on free information card

FOR OVERSEEDING BERMUDAGRASS GREENS.
The crown jewel of the bents that won't cost you a king's ransom.
Emerald
SMARAGD
variety creeping bentgrass.

Greens overseeded with Emerald look rich, play true and cost less to establish and maintain.

Emerald's rapid germination, deep rooting and lush winter color make it a natural for overseeding into bermudagrass greens. And there's more.

Overseeded in the fall, Emerald delivers good playability and a true putting surface throughout the winter. Then in the spring, Emerald really proves its worth with good transition and a less aggressive growth habit that allows bermudagrass to develop easier during the hot spring and summer months.

Easy on your budget.

But here's the payoff: because Emerald is easier to produce, Emerald will cost you less per pound than the most popular bentgrass.

And because Emerald develops less thatch, doesn't demand as much top dressing and even requires less mowing and brushing, Emerald costs less to maintain, too.

Exceptional uniformity.

Emerald is the first seeded creeping bentgrass to combine the vigor, good disease resistance, extremely fine texture and ease of establishment with the uniformity of type previously found among stolon-propogated varieties. And that adds up to less patchiness, less grain, a better playing surface for your club membership.

Bermudagrass green overseeded with Emerald 3 months after seeding, Oconee County Country Club, Seneca, South Carolina.

Order today.

This year, overseed Emerald. The crown jewel of the bents that won't cost you a king's ransom to seed or maintain.

Emerald overseeding checklist
Greens

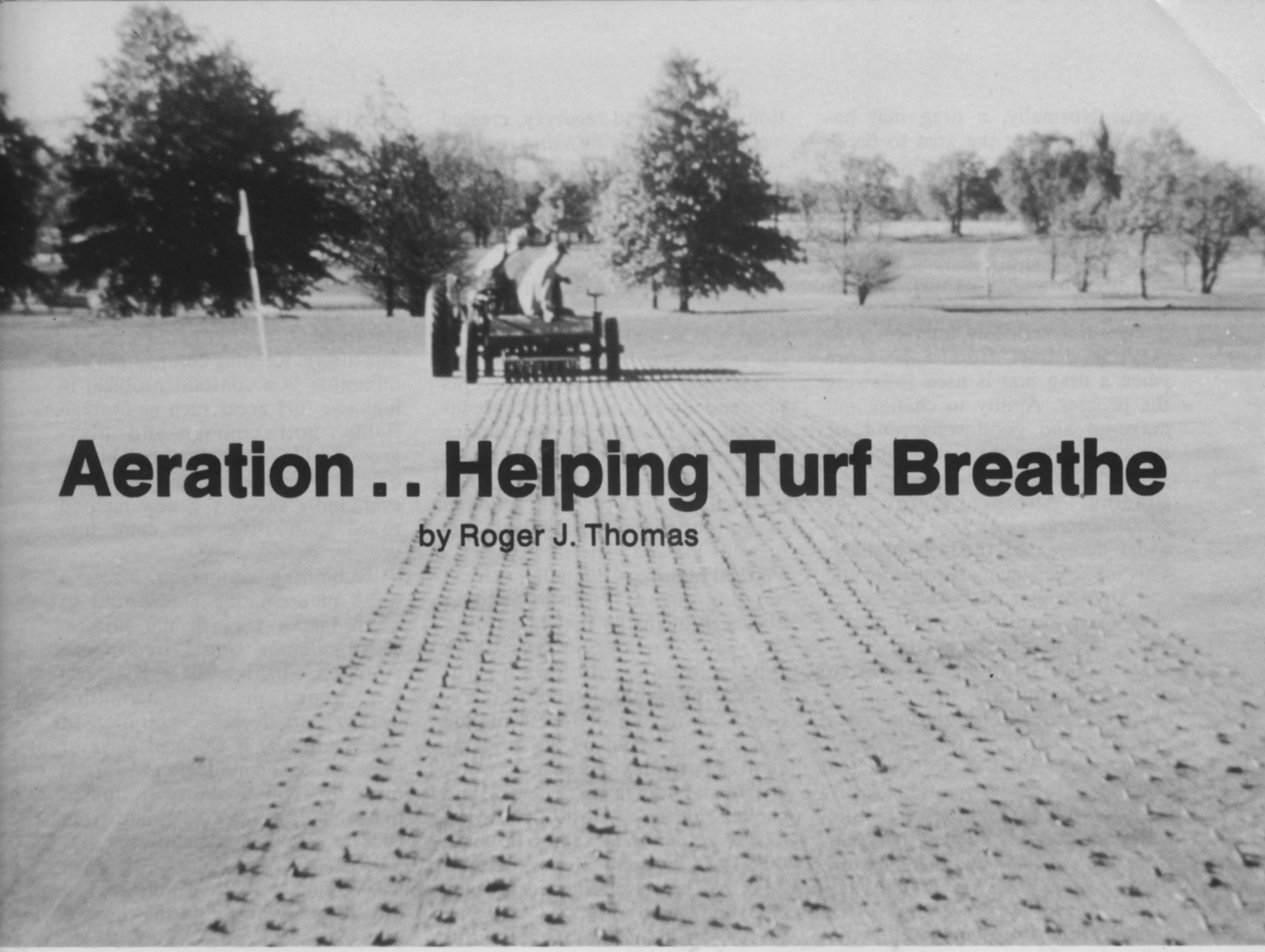
- Seeding rate: 5-8 lb. per 1000 sq. ft.
- Vertically mow in two directions.
- Work seed into bermuda sod.
- Top dress with ¼ inch sand, soil and peat in 6-2-1 ratio.
- Keep moist until germination.
- Upon emergence, fertilize with 1.5 lbs. of actual N per 1000 sq. ft.
- Fertilize monthly with 1 lb. N per 1000 sq. ft.
- Apply fungicides at 10-14 day intervals or when needed.

"Putting green quality" Emerald is now available in larger supplies than ever from your Emerald distributor or jobber or write:

The Rudy-Patrick Division, North American Plant Breeders,
P.O. Box 2955,
Mission, Kansas 66205.

RP Seeds

EMERALD
SMARAGD VARIETY
CREEPING BENTGRASS



Aeration . . Helping Turf Breathe

by Roger J. Thomas

Proper aeration is vital for the development of healthy turf. In the respiration process, plant roots take in oxygen and give off carbon dioxide. The degree of this exchange is governed by soil porosity, with small pores holding water for slow percolation and large pores allowing for good air and water movement.

Turf aeration by mechanical means is not new, of course. From the beginning there has been a sometimes confusing array of methods for moving air through the soil.

In the earliest days, pitch forks and home-made devices simply were rammed into the dry, compacted soil to improve penetration and relieved compaction. Since then we have drilled holes, sliced in deep cuts, cultivated, spiked, intermittently slotted, brushed, dethatched, dragged with deep pronged objects and even cultivated at sub-surface levels.

There even was a theory that called for extremely close mowing to get air to fine cracks in the soil, a practice that proved disastrous during seasonal stress periods. Another short-lived technique was to drag a deep-pronged device through the ground, drawing up both good and poor turf, resulting in a long recovery period. Eventually, experience combined with advances in turf care science and equipment to arrive at acceptable methods for improving air and water movement in the soil.

The primary goal in aeration is healthy turf, achieved with minimal physical damage and disruption of play and appearance. Important, too, is reducing the time and costs involved in the process, which means relying on modern riding equipment that is wide enough to do an effective job as fast as possible.

Spiking. Spikers perhaps were the first real aeration machines, used then just as now for breaking up surface compaction to enhance the movement of air and water. Even early tractors had spikes on their wheels for this purpose (as well as for traction). And many simple devices to crumble crust were made to attach to mowers. Later on, specialized spikers evolved for the singular purpose of penetrating the soil anywhere from ½ to 1½ inch. Spiking remains the easiest and least expensive aeration method. It can be accomplished quickly with little recovery time required, and so lends itself to simple periodic maintenance.

Coring. Efforts to aerate deeper came with pulling out cores. The size of these cores, or plugs, generally ranged from ¼ inch to as large as one inch in diameter. Tube-like devices called tines or spoons merely extracted three- to four-inch deep plugs of soil. Over the years the number of plugs pulled increased for the purpose of adding sand or other amendments to change soil structure, or to get water well below the surface in compacted, high-traffic

areas. Normally, a drag mat has been pulled over the area to break up the plugs and allow the soil to settle loosely in the holes.

Many different tines have been developed, including the hollow closed, open and L-shaped varieties that lift out wedges of turf. Though corn coring is somewhat disruptive, it does not seriously interfere with play or detract from appearance when a drag mat is used following the process. Ability to change soil make-up and good water and air movement have made this method popular among maintenance people.

Blading. Another method of aerating large areas that is gaining wider acceptance today is blading. This involves placing blades into the soil anywhere from four to six inches apart for air and water movement. Besides causing less disruption and returning an area to play more quickly than coring, blading is safer to use during stress periods for turf growth.

Dethatching. What to do about the buildup or organic matter, mostly dead grass and clippings, at the soil's surface has been a problem from the earliest days of turf care. Thatch, sometimes called mat, inhibits growth by preventing water and fertilizer from getting into the soil and to plant roots, and also contributes to the causes of grass diseases. When it builds up to a spongy rough putting surface, play is spoiled.

Dethatching machines were developed to cut the strands of stems and leaf sheaves which failed to decay over a period of years. Another function of this machine was to slice the runners of vascular strands and accumulate them with other extraneous matter on the surface so they could be collected and removed.

A logical evolution was a dethatcher that combined sweeping to efficiently handle the collection problem during the process. I should add that coring machines also help control thatch, as the soil they bring to the surface accelerates decay.

Slitting and dethatching. As the results of the dethatching were more fully appreciated, many maintenance people felt it no longer was desirable to core turf, which in addition to prolonged recovery, created weed problems by bringing seeds to the surface. They also realized severe cultivation and thatch removal at certain times of the year could seriously deter healthy turf growth.

For these reasons, more and more turf men have turned to equipment that dethatches and aerates at the same time. These machines use the slitting method which disrupts play and appearance less because little soil is brought to the surface compared to coring. They also have a cultivating affect in that the whirling blades cause a cracking action in the soil further enhancing the movement of air and water.

Vertical mowing. Originally, vertical mowing meant running slicing blades through the thatch and into the soil. Currently, however, there appears to be a trend toward vertical mowing with the blades set merely to "tick the tops." This technique was brought about by the development of triplex greens mowers, which maintain a consistently fine playing surface. By just "ticking the tops' " rather than slicing into the soil, over a period of time thatch, grain and nap are removed without interrupting play.

The trend has also been influenced by the greens mower's 60-inch cutting swath and ability to collect clippings while mowing. I should stress vertical mowing "ticks the tops" with very little slicing of runners. The speed and simplicity of this method let maintenance people dethatch more often without upsetting play — all good reasons for the trend.

Sub-airing. Keeping compaction at a minimum is a constant problem in high-use turf areas such as football fields, golf courses and playgrounds. Up to now tines and blades have been favored for the job. However, more recently a new method called "sub-airing" has come into broader use.

Sub-airing equipment places a series of oscillating blades four to seven inches beneath the surface. The oscillation causes tremendous vibration, shaking the soil several feet around the slits, permitting heavier and deeper penetration of water and air. If calcined clays or other solid amendments are spread prior to oscillation, penetration of these materials can be found from four to five inches below the surface. Recovery is quite quick when topdressing and fertilizer are applied following sub-airing during the best growing season. □

ABOUT THE AUTHOR — Roger J. Thomas is vice president of the Turf Equipment Division of Jacobsen Manufacturing Company. During his 29 years with Jacobsen, Thomas has worked closely with grounds maintenance people, golf superintendents, etc., throughout the U. S. and abroad, in developing turf care procedures and equipment. He graduated from St. Norbert College, DePere, Wis., and received his masters degree from Marquette University, Milwaukee, Wis.

Servis machines are built with one simple idea in mind.

To be the best.

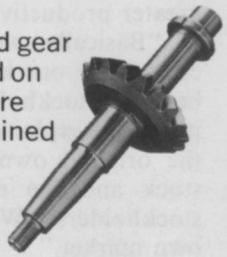
If you're familiar with the name, Servis, you know that we've been manufacturing rotary mowers, cutters and shredders, box scrapers, landscape rakes and rear-mounted blades for a long time. Since 1946 to be exact.

Interestingly enough, some of the first equipment we put in the field is still being used today. That's dependability.

And that kind of dependability is no accident. Servis equipment is designed to do specific jobs. And to do them better than anything else. It's also designed to last.

Take construction. Servis frameworks are unibody constructed to provide extra frame strength. And the high-stress areas are reinforced with heavy gauge tubing.

In addition, all of our rotary cutters feature safety devices to protect the tractor and cutter drive trains.



The gears and gear box shafts used on our machines are precision machined to increase strength and durability, and reduce noise.

And Servis is one of the few lines of equipment that offers you an option of blade carriers on rotary cutters. The Cyclone (dish-pan type) for cutting up to 3" brush. And the Gyro ("A" frame type) for cutting heavy 4" brush.

Of course, this is only part of our story. The point is that Servis builds a complete line of equipment with one simple idea in mind. To be the best.

So whether you've got 4" brush to cut, stalks to shred, ditches to dig, soil to move or land to level, see your Servis dealer. He's got the equipment you need.

For more information about the Servis line, contact your nearest authorized Servis dealer, or write: Austin Products, Inc., Dept. 2-75 S, P.O. Box 1590, Dallas, Texas 75221.

SERVIS

We build equipment the way we do because you wouldn't settle for less.

Circle 116 on free information card

Employee Owned Stock Plan Yields New Morale, Profits

A Rochester, N.Y. tree and landscape firm has found a unique way to stimulate higher productivity among employees by letting them purchase company stock.

The Monroe Tree Experts, Inc. and its subsidiaries Monroe Tree & Landscape, Inc. and Lewis Tree Service, Inc. have designed the plan for non-union employees over 21 who have worked for the company a year or longer. Through the arrangement, employees can receive stock at retirement.

Monroe Tree Experts initiated the program to function like this: the company makes an annual contribution to a trust fund held by Central Trust Company. The bank then purchases Monroe Tree Experts stock which can be sold only by the company or present shareholders. It cannot be traded.

Each year an independent appraisal firm will determine the value of the shares and send employees a statement of the number of shares and its value which they have invested at the bank in their name. The employees are 100 percent vested after six years or at normal retirement age of 60. Upon retirement, they may sell the stock back to the company or to others in the plan.

Thomas Terry, Jr., Monroe Tree Experts president, told WEEDS TREES & TURF the program cost $40,000 to launch with the help of auditors and lawyer Thomas A. Stander of the law firm of Woods, Oviatt, Gilman, Sturman and Clarke. Stander patterned the plan specially for the company. Approval of the Internal Revenue Service was also necessary.

With the company paying for the stock plan, it is probably the first tree and landscape firm to use employee stock ownership. The plan does not interfere with the company's retirement plan, however. About 100 of 250 employees have joined.

The plan also enables the company to receive a tax break. Since it can allocate no more than 15 percent of its payroll to the plan, it is taxed only on income excluding money allotted for employee stock ownership.

Beyond its credits as a distinctive plan and tax break, Terry notes how the plan has made employees feel personally successful and, in turn, helped the company enjoy greater productivity and profit.

"Basically, we did it for an incentive for our key employees who become stockholders in our company," he explained. "By doing this, the original owners could sell the stock and the employees become stockholders. We're making our own market."

Regarding company morale, he points out, "The production has picked up. They're very much more interested. It's a great attitude people in the field and in the state have. They feel they own the company, too."

Energy Prices Grip Future Of Irrigation Crop Yields

Although high costs of energy hit everyone, farmers are especially affected by the increases.

Natural gas prices, in particular, are crucial in agriculture since it supplies over three quarters of all energy used for irrigating crops. Natural gas also pumps the water for crops as well as providing energy for drying crops.

Just as irrigation can supplement the need caused by low rainfall, much of the crop yield directly relates to crops grown from irrigated land.

In the example of Texas, 60 per cent of all crop production comes from irrigation, although irrigation is done over only 35 percent of the land, according to Robert L. Haney, writing in *The Texas Agricultural Experiment Station report* of Texas A&M University.

Haney said if natural gas prices exceed the present $1.30 per thousand feet, farmers will be left with some dire alternatives. They may be forced to get more land at a lower price, scale down their standard of living or default on their land payments.

But all is not lost, however. Research is looking into other alternatives such as increased water pumping and efficiency, although this represents great expense. A definite advantage is development of short season crops, such as a new cotton, which uses 33 percent less energy while increasing lint yield per acre 30 percent. This also requires less fertilizer, pesticides and water and fewer field operations. It may hold one answer to this serious problem of energy costs.

Tree Service Merger Expands Market Area

John and Richard Hawthorne of Hawthorne Bros. Tree Service, Inc. and Gary R. Mullane of Mullane Tree Service have announced a merger. The tree care and landscaping company will be known as Hawthorne Bros. Tree Service, Inc. with Mullane Tree Service as a division.

Although the Hawthorne Brothers are located in Bedford Hills, N.Y. and Mullane's service is in North Salem, their market is expanding to cover Connecticut, lower Westchester and Rockland County and northern Westchester County.

Chevron Announces Expansion Of Fertilizer Production

Chevron Chemical Co., San Francisco, has awarded a contract to the D. M. Weatherly Corp., Atlanta, for a third nitric acid plant at its Kennewick, Wash., fertilizer production complex. Completion of the new nitric unit is scheduled for early 1978.

The additional nitric plant is part of a $43 million expansion of the Kennewick facility. When complete the new nitric acid unit will have a production capacity of more than 550 tons a day and will increase Chevron's output of this important fertilizer raw material to more than 900 tons a day.

ALCA Opens Competition For 1976 Landscaping Awards

The Associated Landscape Contractors of America has opened competition for its Seventh Annual Environment Improvement Awards Program.

Entrants are welcome from all of the landscape industry and may or may not be association members.

Categories for the competition are landscape contracting, landscape maintenance, erosion control and interioscape projects, a new category.

Entries should include a set of working designs or planting plans (maintenance contractors may omit this), a set of color slides showing the development of the project and a written description of the project. Entry fee is $55 for non-members, $45 for members and deadline is Nov. 1, 1976.

Entries will be judged by a jury of professionals and journalists who will make recommendations for awards to the Awards Committee. Jim Gibbs of Atlanta is committee chairman. Separate judging will be done for each of seven geographic regions.

For more information write ALCA, 1750 Old Meadow Road, McLean, Va. 22101.

FTGA Plans Conference, Show For Orlando October 10-14

The Florida Turf-Grass Association Management Conference and Show is scheduled for October 10-14 at the Sheraton Towers Hotel in Orlando.

The event, expected to attract about 1,000 people, will feature a "Down to Earth Turf Session" and 27 special speakers. The main address will be Dr. Kenneth Tefertiller's speech "Turf-Florida's Jolly Green Giant" as part of the program theme, "Turf from Surf to Surf."

Over 60 national manufacturers will display equipment and/or products.

For more information, contact Ms. Nona Murphy, executive secretary, 1520 Edgewater Dr., Suite E, Orlando, Fla. 32804.

STRAIGHT TALK FROM YOUR DITCH WITCH MAN

"My job is helping you do your job!"

"All equipment dealers talk about service after the sale. Let me tell you what service means to me. Selling and servicing Ditch Witch equipment is my *only business.* The way I see it, my job is helping you do *your* job. I do that by providing the quality equipment you need and helping you maintain it. Ditch Witch equipment is built to last. It's basic design makes routine maintenance easy. But, like any construction equipment, it sometimes requires repair service. I maintain a full inventory of Ditch Witch parts and a staff of professional factory-trained service personnel who are ready to serve you wherever and whenever you need them. At Ditch Witch we tell it to you straight!

Call (800) 654-6481 Toll Free
for the name of the dealer nearest you.

Professional Ditch Witch sales personnel know their product line and the needs of customers in their territory.

Ditch Witch . . . equipment from 7- to 195-HP.

CHARLES MACHINE WORKS, INC.
P.O. Box 66
Perry, Oklahoma 73077

DITCH WITCH ®

Circle 104 on free information card

Cherry Aphid Wrecks Season On Trees, Mustard Plants

Season is underway for the black cherry aphid as it feasts upon its favorite food, sweet cherries.

Aphid damage is recognized by the distorted terminal growth on the leaves. This shiny coating is called 'honeydew'.

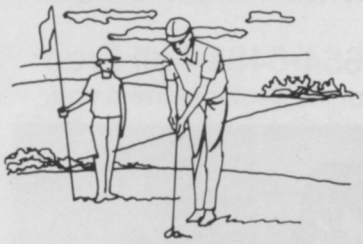
Black cherry aphids begin life after overwintering on the tree and hatching as the buds are opening becoming green. By spring and early summer, wingless aphids are developing which will distort the leaves and then take their destruction to watercress, peppergrass and other mustard family plants.

Malathion, guthion, diazinon or parathion are effective in controlling the aphids. When applying them, give careful, thorough coverage of the terminal growth and pay special attention to the minimum days waiting time from last application to harvest.

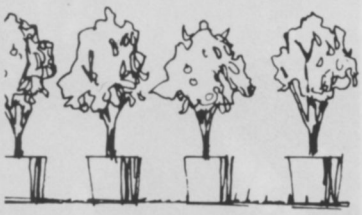
Horticultural Perlite...

The multi-purpose soil conditioner for turf, containers and propagation.

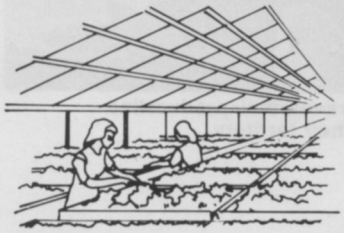
Professional landscapers and grounds maintenance men have long made Horticultural Perlite one of their main 'tricks of the trade'. It's an ideal soil conditioner that helps promote "a sea of green velvet". You see, by preventing compaction, it keeps the soil loose enabling more oxygen to reach and help nourish the root system. And because Horticultural Perlite also retains three to four times its weight in moisture, it keeps the root network moist long after watering. The result is a beautiful blanket of green growing on a thick healthy, robust root-system that not only keeps grass beautiful, but prevents **golf courses, institutional and campus lawns and residential lawns** from getting soggy, mushy or soft underfoot.



Nurserymen find Horticultural Perlite practically indispensible for **container grown plants and shrubs** because of its ability to retain moisture, and to keep the mixture around the root environment loose. It is also a great "starting mixture" for transplanted stock as it helps reduce the incidences of transplant shock. And because Horticultural Perlite is sterile and non-toxic, it won't rot, decompose, disintegrate or break down. Nor will it help promote insect life. Being light in weight, Horticultural Perlite makes container moving light work and shipping costs a lighter expense. It's not only ideal for your plants — Horticultural Perlite is ideal for your business.



For **plant propagation**, Horticultural Perlite soil mix is almost as important as sunlight. Because of its water-retention characteristics, this mixture maintains an even distribution of moisture to stimulate fast root development in cuttings and to speed seed germination. Most important, by keeping the starting mixture loose, Horticultural Perlite permits a freer flow of oxygen to help nurture the new growth. This also makes transplanting easy; without root damage; and without undo shock. Horticultural Perlite is inert matter that can last indefinitely in your seed beds. It is sterile, odor-free and can't promote insects or bugs. It is a great asset for the new beginnings of plant life.



Perlite Institute, Inc.

45 West 45th Street • New York, N. Y. 10036 · (212) 265-2145

Circle 110 on free information card

Calcium Arsenate One Way For Control of Poa Annua

A concern with use of herbicides for control of *Poa annua* is the injurious effects of the herbicide on desired turfgrasses, according to Dr. A. J. Turgeon of the University of Illinois horticulture department.

"If a preemergence herbicide reduces the spreading growth of a turfgrass, it may not grow into voids even if environmental conditions favor rapid growth," he reported at the Kentucky Turfgrass Conference held last year at Barren River Lake State Resort Park, Lucas, Ken. Proceedings of the conference were published recently.

"Similarly, the application of a postemergence herbicide may not provide satisfactory results if it injures the desired turfgrass too severely," he said.

"Calcium arsenate is a unique herbicide in that it has both preemergence and postemergence activity," he said. Thus, it can reduce the existing stand of annual bluegrass and also preclude new annual bluegrass development from seed germination. However, calcium arsenate application will not result in healthy turf where environmental conditions are unfavorable.

He said research at the University of Illinois has shown complete control of annual bluegrass with calcium arsenate in closely clipped Kentucky bluegrass turf was followed by the development, and eventual dominance, of creeping bentgrass in the turf. Hence, one problem may be replaced by another following herbicide use where the growth requirements of a desired turfgrass are ignored, he said.

Also, where calcium arsenate was applied for several years consecutively to Kentucky bluegrass, earthworm activity was eliminated and substantial thatch developed. The thatched turfs were observed to be more wilt-prone during midsummer stress periods and *Helminthosporium* disease incidence was severe in spring.

JOHN DEERE MAKES TRACTORS FOR JOBS OF ALL SIZES. BECAUSE YOU CAN MAKE MONEY ON JOBS OF ALL SIZES.

There's no such thing as a tractor that's right for any size job. If it's big enough for golf course maintenance, it's probably too big for most residential work.

That's why John Deere Tractors come in a wide range of sizes. So you can have John Deere performance and dependability going for you on any job.

Take the new John Deere 2040. It has a 40*-hp diesel engine, 8-speed constant-mesh transmission, and plenty of hydraulic power to handle any attachment you might need. Including a 6-foot, center-mounted rotary mower. The 2040 was designed to do the big jobs faster and easier.

For work that doesn't require a tractor as big as the 2040, there's the hydrostatic-drive John Deere 400. It's powered by a twin-cylinder, 19.9-hp engine. And there's a 5-foot, center-mounted rotary mower that's designed to match the 400.

To do small jobs economically and efficiently, John Deere offers you the 200 Series lawn and garden tractors. You can choose from 8-, 10-, 12-, and 14-hp models, all with variable-speed drive to change ground speed without stopping or shifting gears. Rotary mowers are available in either 38- or 46-inch widths.

With any size John Deere Tractor, you also get the John Deere tradition of expert service, parts availability and flexible financing.

For any job that comes along —big, small or in-between—John Deere has a way to do it. Profitably.

**Maximum PTO horsepower measured at 2,500 engine rpm (factory observed).*

NOTHING RUNS LIKE A DEERE®

JOHN DEERE

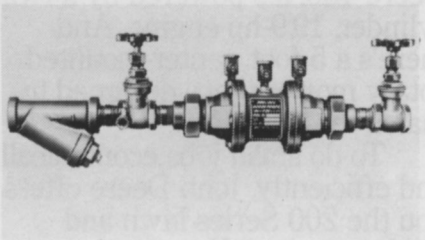
Circle 132 on free information card

Products

Jacobsen has introduced a new front reel trimming mower with automatic drive. It has an 8 h.p. air-cooled Kohler engine, automatic hydrostatic drive and various safety features such as neutral starting, interlocks for power take off and drive train, recommended shielding, and separate service and parking brakes. It is also built to American National Standards Institute standards — the only U.S. made mower so designed today.

Circle 801 on free information card

Double check valve assemblies are available from Rain Bird. Made of all bronze construction with stainless steel internal parts and modu-



lar design, the assemblies fit easily into the water system and prevent reverse flow in water lines as well as stopping polluted water entering the potable water supply.

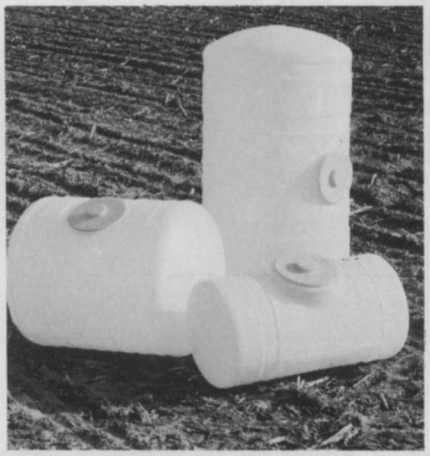
Circle 802 on free information card

Three new slide sprayer models by Root-Lowell Corporation find use for plant and livestock care. They

maintain pressure of up to 180 pounds and have different nozzles to reach over 25 feet. Each are all brass and corrosion resistant.

Circle 803 on free information card

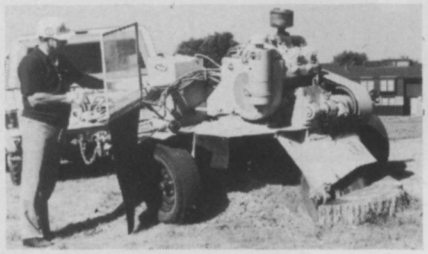
Horizontal tanks in 50 to 500 gallons are marketed by Debson Incorporated. Their fully ribbed construction, low-melt index polyethylene



and translucence make for a convenient, sturdy product while a 10 inch top opening gives easy entry to the tank interior.

Circle 804 on free information card

Vermeer Manufacturing Company has introduced another stump cutter in their tree equipment line. It has a 65 h.p. Wisconsin air-cooled engine and weighs 2900 pounds. Special



features are its all hydraulic control panel, safety shields and ability to cut out stumps 24 inches below ground level and up to 72 inches wide without repositioning.

Circle 805 on free information card

Problems with algae and weeds on lakes, ponds and streams are dealt with in the 64 page book, "How to Identify and Control Water Weeds and Algae." With full color photos and U.S. maps, the book identifies and studies the algae problem while offering many solutions and formulas.

Circle 806 on free information card

Lawn Boy is marketing a limited edition "Liberty Machine" mower in keeping with the nation's Bicentennial. Created in a familiar simple motif, the mower has an electric starting, solid-state ignition and is self-propelled.

Circle 807 on free information card

A turf sprayer-trailer is available for the Bean 100 gallon high or low pressure sprayer manufactured by FMC Corporation. Towed by small

turf tractors, it has a 15 foot boom and mounts in the back of utility vehicles.

Circle 808 on free information card

Fox Valley Marketing Systems, Inc. has created an easy marker which adjusts to arm length easily and sprays upside down. Guaranteed not to clog, the product comes in five fluorescent colors and white, blue, yellow and aluminum. It is packaged in 12-13 oz. cans per case.

Circle 809 on free information card

A semi automatic sharpening device and sprocket tip guide bars are now added as standard equipment to saws made by the McCulloch Corporation. Called Auto Sharp, the device gives maximum cutting efficiency as a single knob starting the grinding wheel and the sharpening motion. These are features of the Mini Mac 35 saw.

Circle 810 on free information card

TOTAL MANEUVERABILITY

THE HUSTLER 272A

Truly a professional piece of groundskeeping equipment, the HUSTLER mows areas where hand-mowers have been necessary. The HUSTLER becomes an extension of the operator, allowing one man and one machine to complete complicated mowing tasks that can take a variety of machines and two or three men.

Groundskeepers, contractors and superintendents use the HUSTLER because of its proven dependability and productivity which saves them time and manpower dollars.

WHY DUAL HYDROS?

The HUSTLER has *total maneuverability* because of its unique design of two hydrostatic transmissions which operate independently. The *dual hydros* allow the operator to back up and turn the machine with a twist of the wrist. *Dual hydros* allow one wheel to move forward while the other reverses so that the mower mows square corners and doesn't miss the edges, getting around tough spots like park benches, around tree trunks and between fence posts.

72-INCH DECK

The feature of the unobscured 18" offset deck allows the operator to reach under guard rails and bushes, and to do difficult mowing jobs with maximum efficiency.

The 72-inch mower deck can mow up to four acres per hour. The hydraulic lift simplifies changing attachments, blade servicing and raising of mowing deck to clear curbs.

Other HUSTLER FEATURES that make your life easier include:

- *Interlocking ingnition*
- *Parking brake*
- *Headlights for night mowing*
- *Adjustable suspension seat*

ALWAYS IN SEASON WITH HUSTLER ATTACHMENTS

You can work the HUSTLER tractor year-round with attachments that include ROPS cab, snow thrower, rotary broom, dozer blade for earth and snow, edger and a flail mower. Transporting the HUSTLER is easy with a tilt deck, easy load trailer. Save money by putting one piece of equipment to work for several. Check out the truly professional grounds maintenance machine with TOTAL MANEUVERABILITY— the HUSTLER 272A.

Clip and mail for more info on the HUSTLER 272A to Excel Industries, Inc., Box 727, Hesston, KS 67062.

Name _____

Address _____

City _____

State _____ Zip _____

Phone ( ) _____

Company _____

Type of operation _____

Excel Industries, Inc.
Box 727/Hesston, Kansas 67062
316/327-4911

Circle 141 on free information card

Its active ingredient is 29.1 percent paraquat dichloride (1,1-dimethyl 4,4-bipyridinium dichloride).

Elanco, Indianapolis, Ind., manufactures several turf herbicides. Balfin can control smooth and hairy crabgrass, annual bluegrass, goosegrass (silver crabgrass or crowsfoot), watergrass and yellow and green foxtail.

Balan granular can control *Poa annua* smooth and hair crabgrass, watergrass (barnyardgrass) and yellow and green foxtail. It works on established perennial bluegrasses, perennial bluegrasses, perennial ryegrass, centipedegrass, fescue, zoysiagrass, Bermudagrass, St. Augustine grass and bahiagrass.

Its active ingredient, 2.5 percent, is N-butyl-N-ethyl-aaa-trifluoro-2, 6-dinitro-p-toluidine.

Surflan can control barnyardgrass, crabgrass, foxtails, goosegrass, johnsongrass (from seed), fall panicum, brachiaria (signalgrass), crowfootgrass, wild oat, common chickweed, common purslane, carpetweed, Florida pursalne, lambsquarters and pigweed.

Its active ingredient is 75 percent oryzalin (3,5-dinitro-N4,N4-dipropylsulfanilamide).

Spike can control bedstraw, *Poa annua,* burclover, downy bromegrass, ripgut bromegrass, smooth bromegrass, smallflower buttercup, wild carrot, cheat, chickweed, red clover, cocklebur, Virginia creeper, crowfootgrass, curley dock, dogfennel, fescue, rattail fescue, filaree, redstem filaree, annual fleabane, foxtail, goldenrod, gumweed, henbit, Japanese honeysuckle, horseweed, knapweed, kochia, lambsquarters, black medic, morning glory, common mullein, silverlead nightshade, wild oat, Texas panicum, Virginia pepperweed, pigweed, buckhorn plantain, puncturevine, giant ragweed, Italian ryegrass, annual sedge, shepherd's purse, annual sowthistle, spikeweed, spurge, spotted spurge, yellow starthistle, telegraphplant, Russian thistle, trumpetcreeper, velvetgrass, vetch, witchgrass, foxtail barley, carpetweed, chicory, common cinquefoil, white sweet clover, poison ivy, field sandbur, swamp smartweed, perennial sowthistle, prostrate spurge, barnyardgrass, crabgrass, itchgrass, johnsongrass, (seddling), lovegrass, orchardgrass, poorjoe, common purslane, common ragweed, Bermudagrass, cudweed, dalligrass, Venus lookingglass and vasey grass.

Its active ingredient is 80 percent 1-(5-tert-butyl-1,3-4-thiadizol-2-yl)-1, 3-dimethylurea.

Amchem, Ambler, Pa., offers a wide range of turf herbicides, Amitrol can control muhlenbergia, bentgrass, Bermudagrass, tall fescue, quackgrass and orchardgrass.

Its active ingredient is 1 percent amitrole (3-amino-1, 2, 4-traizole).

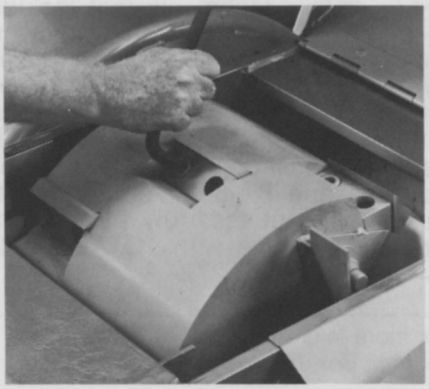
Amitrol-T can control poison oak, poison ivy, quackgrass, tall

"Sound Conditioned" M & M Brush Chippers

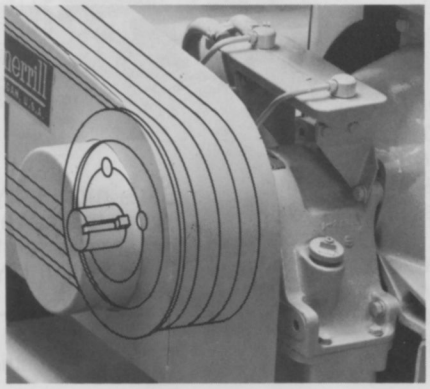
for... less noise... more efficiency

Applying engineering designs which "Sound Conditioned"* our industrial scrap reduction machinery, Mitts & Merrill can modify our brush chippers for low noise levels. At the same time, those engineering features which have made Mitts & Merrill the leader for years have been retained.

*Copyright Mitts & Merrill, Inc., 1973, 1974, 1975. All rights reserved.



Staggered knife pattern, for years a Mitts & Merrill feature, has always resulted in a lower noise level. First, by segmenting the noise source. Second, through smoother cutting action. Third, by producing smaller chips.



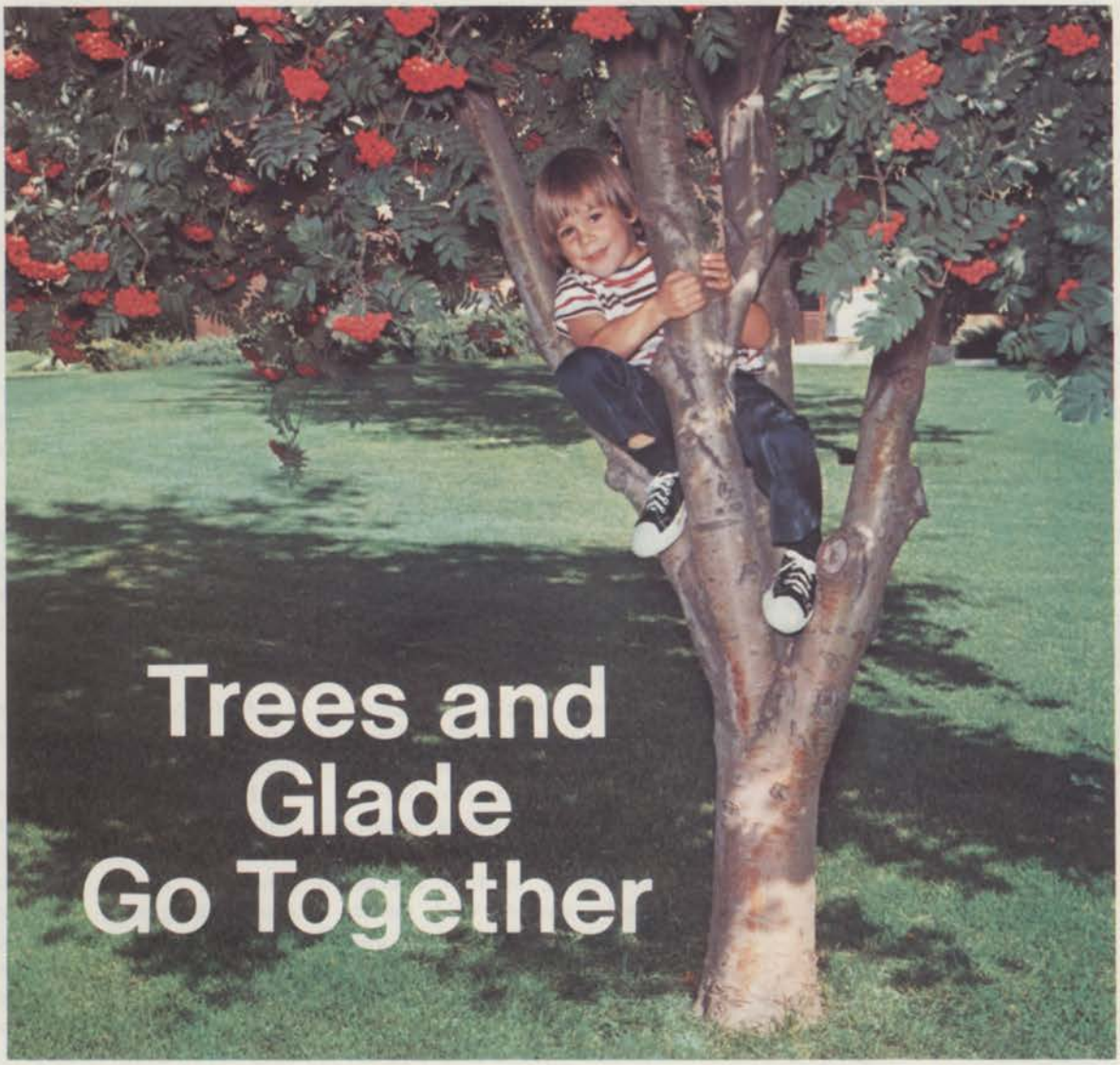
Optional torque converters and the heaviest steel cylinder — even without an external flywheel — combine to give positive cutting action under the most rugged conditions. Isolates the engine from shock. Minimizes maintenance.

Plus • **Positive safety-lock pin** for greater operator safety • **Swing-away, folding feed chute** protects cutting chamber; allows instant access and increases maneuverability • **Heavy duty construction** includes coil spring, torsion-type suspension, and box tubular steel frame.

mitts & merrill — SUBSIDIARY walco WALCO NATIONAL CORPORATION

Dept. WTT 52, 109 McCoskry St., Saginaw, Michigan 48601

Circle 109 on free information card



A new natural team, Glade Kentucky bluegrass and trees! Glade performs well in moderate shade, especially when mixed with fine fescues. A selection from Rutgers University (tested as P-29), Glade is an improved, low-growing, medium to dark green grass with fine leaf texture and thick, rapid-growing rhizome and root system. Glade has good resistance to important turfgrass diseases including powdery mildew.

Like boys and trees, Glade and shade go together. Mixed with other elite bluegrasses and fine fescues in moderate shade, Glade is a natural.

Get new Glade at local wholesale seed distributors.

Glade

KENTUCKY BLUEGRASS

U. S. Plant Patent 3151

Another fine product of Jacklin Seed Company

fescue, Bermudagrass, Canada thistle, milkweed and horsetail rush.

Its active ingredient is 21 percent amitrole (3-amino-1, 2, 4-triazole).

Nu-Lawn weeder is designed to control mustards, pennycress, smartweed, henbit, knawel, lambsquarters, pepperweed, pigweed, ragweed, shepherd's purse, wild radish and yellow rocket. It will not control established perennial broadleaf weeds such as Canada thistle, bindweed or horsetail rush.

Chemically, its active ingredient is 8.4 percent bromoxynil (3,5-dibromo-4-hydroxybenzontrile) ester of octanoic acid.

Super D weedone works to control buckhorn plantain, bull thistle, burdock, buttercup, butter print, Canada thistle, chickweed, chicory, clovers, cinquefoil, cocklebur, dandelion, docks, Frenchweed, galinsoga, ground ivy, hawkweed, heal-all, henbit, jewel weed, jimson weed, knotweed, lambsquarters, mallow, morning glory, mustard, oxalis, pennywort, peppergrass, pigweed, plantain, poverty weed, purslane, ragweed, sheep sorrel, smartweed, sow thistle, speedwell, vervains, wild aster, wild carrot, wild garlic, wild lettuce, wild onion, wild radish, and yarrow.

Its active ingredients are 20.1 percent diethanol amine salt of 2,4-dichlorophenoxyacetic acid, and 1.9 percent diethanol amine salt of dicamba.

Super D Weedone contains banvel D and controls broadleaf plantain, cinquefoil, clovers, common chickweed, docks, dandelion, ground ivy, heal-all, henbit, knotweed, (young or mature), mouse-ear chickweed, mustards, narrow-leaved (buckhorn) plantain, oxalis, pennywort, purslane, ragweed, sheep sorrel, speedwell, spotted spurge, thistles, wild carrot, wild garlic, morning glory, wild onion and yarrow.

Active ingredients are 1.33 percent diethanolamine salt of 2, 4-dichlorophenoxyacetic acid and .44 percent diethanolamine salt of dicamba.

It is not designed for use on lippia, dichondra, St. Augustine, carpetgrass or bentgrass lawns unless damage can be tolerated.

Weedone preemergence crabgrass control is marketed to control common chickweed, fall panicum, green foxtail, hairy (large) crabgrass, lambsquarters, purslane, smooth (small) crabgrass, witchgrass, yellow foxtail and goosegrass.

At 5.7 percent, its active angredient is dimethylester of 2, 3, 5, 6-tetrachloroterephthalic acid.

Weedone 2, 4, 5 TP can control common chickweed, mouse-ear chickweed, henbit, ground ivy, prostrate (spotted) spurge, yarrow, clover and black medic.

It should not be used on St. Augustine, carpet and centipede lawns.

The active ingredient is 60.3 percent butoxyethanol ester of silvex.

Weedone LV-4 can control bindweed, thistle, smartweed, wild buckwheat, wild garlic, curled dock and wild onion.

It may injure wheat.

At 64 percent, its active ingredient is 2, 4-dichlorophenoxtacetic acid, butoxyethanol ester.

Emulsamine E-3 can control bull thistle, burdock, cocklebur, coffeeweed, Frenchweed, galinsoga, jimsonweed, kochia, lambsquarters, morning glory, wild mustard, peppergrass, pigweed, wild lettuce, wild radish, common ragweed, Russian thistle, common sowthistle, velvetleaf, alkali mallow, aster, bindweed, blue lettuce, blueweed, bur ragweed, Canada thistle, chicory, dandelion, docks, goldenrod, nettles, orange hawkweed, plantains, poverty weed, ragweed, sowthistle, stinging nettles, toad flax, wild garlic and wild onion.

Do not apply it to St. Augustine, bentgrasses, dichondra or clover.

Its chemically active ingredients are 50.7 percent dodecyl amine salts of 2,4-dichlorophenoxyacetic acid and 12.7 percent tetradecyl amine salts of 2,4-dichlorophenoxyacetic acid.

3-D Weedone can control chickweeds, cinquefoil, clovers, dandelions, ground ivy, hawkweek, heal-all, henbit, knotweed, morning glory (annual) oxalis, plantains (broad, narrow), pennywort, purslane, sheep sorrel, speedwell (annual), spotted spurge, wild garlic, wild

Circle 120 on free information card

The "Tow-Boy"
SOD HARVESTER

- Under $10,000
- Up to 1500 sq. yds. pr./hr.
- 2 loaders—1 driver
- Hooks & unhooks in 5 min.
- Proven *low* maintenance
- Custom handcrafting

For brochure write or call collect:
2625 Johnstown Road
Columbus, Ohio 43219
(614) 475-8520

Princeton Manufacturing Company

Circle 149 on free information card

HITCH UP

TILTSTER the low bed trailer that tilts to ground level for easy 'roll aboard' loading.

An easy, one-man operation, Tiltster transports loads up to 5,000 lbs. anywhere you want them to go. Just a simple turn of the jack handle and the trailer body tilts downward for easy 'roll-aboard' loading. Bed automatically returns to hauling position when loading is completed. Tapered, self-adjusting tailgate ramp provides smooth, gradual incline for fast, safe loading. Three models; 2,000 lbs. to 5,000 lbs. capacity.

Circle No.

TRAILEVATOR Hydraulically lifts its own load in seconds

Trailevator lowers to ground level for fast, 'roll aboard' loading then lifts its own load to hauling position in seconds. Lowers and lifts without uncoupling from towing vehicle. Four models, two capacities: 3,000 lbs. and 2,000 lbs. Bed sizes up to 5'-10" x 10'.

Circle No.

NORTHLAND utility trailers

Strong, durable, all-purpose utility trailer with unitized steel bed construction. Body tilts to ground level for fast, easy loading. Steel side racks and end gate with positive locking latch available. Three models; capacities to 2000 lbs.; bed sizes to 6' x 8'.

Circle No.

Single Axle Tiltster

Capacities to 3000 lbs.

Circle No.

Low Profile Utility Trailer

Capacities to 1500 lbs.

Circle No.

Flat Bed Utility Trailer

Two bed sizes, 1,000 lbs. cap.

Circle No.

Flat Bed Tandem Axle

Capacities to 2500 lbs.

Circle No.

MagLiner®

Magline Inc., Pinconning, Michigan 48650
P.O. Box 268 Tel: (517) 879-2411

W.I.N. with NITROFORM® and save!

W.I.N. with Nitroform® nitrogen . . . and save! In lower cost per pound of W.I.N.

Corenco bags it!

HERCULES INCORPORATED Turf and Horticultural Products Wilmington, Delaware 19899

STH76-7

Circle 121 on free information card

aerate your lake or pond

- Prevents fish kills.
- Eliminates off odors.
- Adds life-giving oxygen.
- No maintenance—just pennies a day for electricity.
- Burns up pollutants which grow algae permitting fish life to flourish.
- Easy to install—comes complete—plugs into house current.
- Can be installed through ice.

For further details write

gen-AiRator -KEMBRO

Box 205. Mequon. WI 53092 or call (414) 242-2630

Circle 148 on free information card

onion, yarrow, bindweeds, buttercups, burdock, chicory, cockleburs, docks, galinsoga, jewelweed, jimsonweed, knawel, lambsquarter, mallow, peppergrass, pigweed, poverty weed, mint, mustard, ragweed, smartweed, thistles, vervains, vetch, wild aster, wild carrot, wild daisy, wild geranium, wild lettuce and wild radish.

It should not be used on lippia or dichondra lawns and may injure bentgrass, St. Augustine grass, centipede grass, carpetgrass and newly seeded lawns.

Active ingredients are 17.3 percent butoxyethanol ester of 2,4-dichlorophenoxyacetic acid, 8.2 percent butoxyethanol ester of 2,4,5-dichlorophenoxypropionic acid, and 1.5 percent dicambra (2-methoxy-3, 6-dichlorobenzoic acid).

Weedone chickweed killer can control common and mouse-ear chickweed henbit, clover, yarrow and prostrate (spotted) spurge.

St. Augustine, centipede, carpetgrass and lawn grass substitutes such as dicondra and lippia are sensitive to this product and should be tested before application is made to an entire lawn.

Its active ingredient is 12.8 percent butoxyethanol ester of silvex.

Weedone crabgrass killer can control crabgrass. It should not be used on St. Augustine grass.

Chemically, its active ingredient is 10.3 percent calcium acid methanearsonate.

Weedone crabgrass killer granular can control crabgrass.

Its active ingredient is 2.5 percent disodium methlarsonate-hexahydrate.

Weedone granular lawn weed killer can control dandelion, plantain, chickweed, spotted spurge, and clover.

The chemically active ingredients are 2.67 percent 2,4-dichlorophenoxyacetic acid and 1.33 percent silvex (2-(2, 4, 5-trichlorophenoxy) propionic acid.

Velsicol, Chicago, Ill., manufactures several turf herbicides. Banvel 2,4-D can control dandelion, plantains, curly dock, chickweeds (common mouse-ear and perennial or stitchwort), dog fennel, knotweed, sheep sorrel, clover, knawel, chicory, henbit, ragweed, pigweed, burdock, poison oak, poison ivy, ground ivy (creeping charlie), wild garlic, wild onion, English daisy, spurge, purslane, pepperweed, lawn burweed, hawkweed, spurry and carpetweed.

It is not designed for use on dichondra, St. Augustine grass or centipede grass or where desirable bent grasses or clover exist.

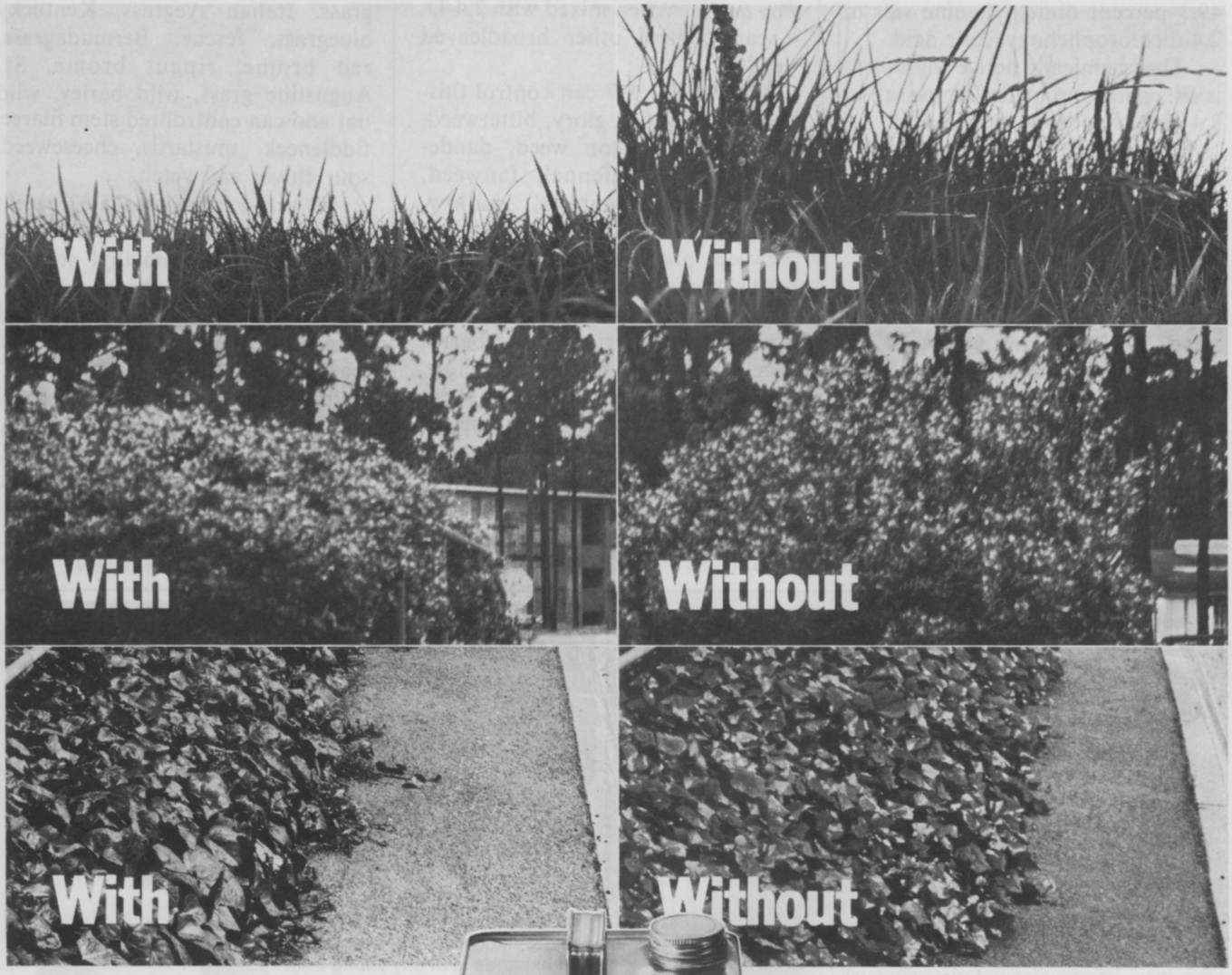
Its active ingredients are 18.4 percent dimethylamine salt of dicamba, 3.2 percent 3, 6-dichloro-o-anisic acid, 3.2 percent dimethylamine of related acids, and 36.8 percent, dimethylamine salt of 2,4-dichlorophenoxyacetic acid.

2,4-D amine can control bitterwintercress, box elder, buckhorn, bull thistle, bullrush, burdock, bur ragweed, buttercup, Canada thistle, catnip, chickweed, chicory, cocklebur, coffee bean, creeping Jenny, curly indigo, elderberry, goldenrod, ground ivy, hemp, hoary cress, honeysuckle, indigo, ironweed, jimsonweed, lambsquarters, nutgrass, pennywort, pigweed, plantain, poison ivy, pokeweed, povertyweed, puncture vine, purslane, rush, Russian thistle, sagebrush, shepherd's purse, sow thistle, stinkweed, sumac, sunflower, Virginia creeper, wild garlic, wild lettuce, wild radish, willow, witchweed, arrowhead, artichoke, bindweed (hedge, field and European), locoweed, Mexican weed, morning glory and mustard.

Weedar 64 can control beggarticks, bull thistle, burdock, cockle, cocklebur, coffee weed, fleabane (daisy), Frenchweed, galinsoga, goatsbeard, jimsonweed, kochia, artichoke, aster, Austrian fieldcress, bindweed, blue lettuce, Canada thistle, catnip, chicory, dandelion, docks, dogbane, knotweed, lambsquarters, wild lettuce, mallow, marsh elder, morning glory, mustard, parsnip, peppergrass, pigweed, prickly lettuce, primrose, goldenrod, ground ivy, heal-all, hoary cress, horse tail, iron weed, loco weed, nettles, orange hawkweed, plantains, poverty weed, wild radish, common ragweed, Russian thistle, smartweed, common sow-

Continues on page 42

Don't kill it. Control it.



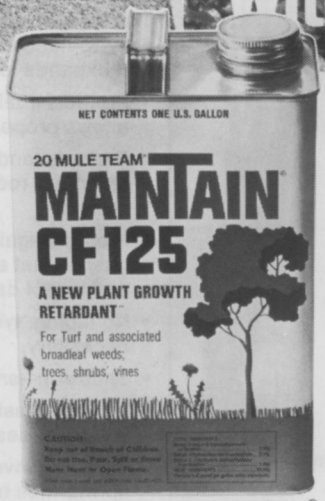
MAINTAIN® CF 125 is the growth retardant that thinks like a gardener. It works with nature, not against it.

MAINTAIN effectively slows the growth rate of grass, shrubs and trees. That means less mowing, trimming, edging and pruning. And that means you'll be cutting down on maintenance costs.

Just about everything MAINTAIN touches grows slower. (How much slower depends on the kind of weather and greenery you've got.)

Your maintenance people won't have to go out on a limb, either. MAINTAIN can be sprayed where machinery can't go. Up steep slopes, around guard rails, along fences.

Besides keeping a green thing from getting out of hand, MAINTAIN practically puts a stop to pesky broadleaf weeds.



U.S. BORAX
A MEMBER OF THE RTZ GROUP

In your business, nature running wild can increase the chance of fire or damage. So you can spend a lot of money on maintenance, use a soil sterilant to eliminate vegetation, or use a growth retardant to control nature and keep things green.

Naturally, it makes more sense to use MAINTAIN.

Contact your U.S. Borax distributor or your nearest U.S. Borax office.

California: 3075 Wilshire Blvd., Los Angeles 90010
Georgia: 296 Interstate N. Parkway, Atlanta 30339
Illinois: 1700 E. Sherwin Ave., Des Plaines 60018
New Jersey: 60 Craig Road, Montvale 07645
Canada: 234 Eglinton Ave., E., Toronto, Ont. M4P 1k5

Circle 108 on free information card

thistle, sunflower, tumble weed, vervains, vetch, wild carrot, ragweed, sowthistle, stinging nettles, wild strawberry, tan weed, toadflax, vervains, wild garlic, wild onion and wild sweet potato.

Its chemically active ingredient is 49.3 percent dimethylamine salt of 2,4-dichlorophenoxyacetic acid.

The chemically active ingredient is 49.5 percent dimethylamine salt of 2,4-dichlorophenoxyacetic acid.

Banvel 4-S can control curly dock, common chickweed, mouse-ear chickweed, stitchwort, dog fennel, knotwood, sheep sorrel, clover, knawel, chicory, henbit, English daisy, spurge, purslane, pepperweed, carpetweed, lawn burweed, hawkweed and spurry.

Its active ingredients are 49 percent dimethylamine salt of dicamba, and 7.9 percent dimethylamine salt of related acids.

Pennwalt Corp., Philadelphia, makes two turf herbicides. Endothol turf herbicides is used to control Veronica (speedwell), knotweed, bur clover, white clover, sweet clover, black medic, chickweed (in the South), cranesbill, filaree, dichondra (pony foot) goatshead, henbit, lespedeza, oxalis, vetch, little barley, fescue grass, cheat (and other annual bromes), ryegrass and *Poa annua*. When mixed with 2,4-D, it can control other broadleaved weeds.

Pennamine D7 can control thistle, wild morning glory, bitterweed, broomweed, croton weed, dandelion, dock, dogfennel, fanweed, kochia, lambsquarters, mallow, marshelder, mustards, peppergrass, pigweed, plantains, ragweed, shepherd's purse, tarweed, vetch, wild carrot, wild garlic, wild onion, wild ragweed, buckbrush, elderberry, hazel, coastal sage, sumac, willow, sand shinnery oak, field bindweed, leaf spurge, poison ivy, horse nettle, ironweed, cocklebur, milkweed, stinging nettle, black-eyed susan, and snow-on-the-mountain.

It is an aqueous solution of diodium salt of endothol.

3M Company of St. Paul, Minne., is not currently marketing commercial products but does have an EPA temporary permit label for Embark plant growth/regulator/herbicide (formerly MBR 12325). It may be applied to bentgrass, Italian ryegrass, Kentucky bluegrass, fescue, Bermudagrass, red brome, ripgut brome, St. Augustine grass, wild barley, wild oat and can control red stem filaree, fiddleneck, mustards, cheeseweed, sour clover and vetch.

Its active ingredient is 52 perent diethanolamine salt of N(2,4-dimethyl-5-trifluoromethyl sulfonyl amino phenyl) acetamide.

Thompson-Hayward Chemical Company, Kansas City, Kansas, manufactures Ded-Weed for controlling Canada thistle, perennial sow thistle, bindweed, white top (hoary cress), Russian knapweed, and other annual and perennial weeds in turf.

It may injure bentgrass, St.

Continues on page 44

Meet the Un-Tearable Mr. **Tu-Tuf**

tu-tuf®

CROSS-LAMINATED POLY FILM

the weed control barrier

Super strong TU-TUF Cross-Laminated Poly Film as a barrier material effectively reduces the growth of all types of unwanted weeds. It's ideal for agricultural, as well as non-crop areas and a wide variety of industrial applications . . . including:

- **Railroad, Pipeline, Highway, Power and Telephone Right of Ways**
- **Petroleum Tank Farms and Pumping Sites**
- **Roadsides** • **Storage Areas**
- **Fence Rows** • **Parking Areas**
- **Manufacturing Plant Sites**

A TU-TUF BARRIER FOR BETTER WEED CONTROL . . .

- **Requires low maintenance** • **Is low cost**
- **Eliminates use of expensive herbicides and spraying treatments**

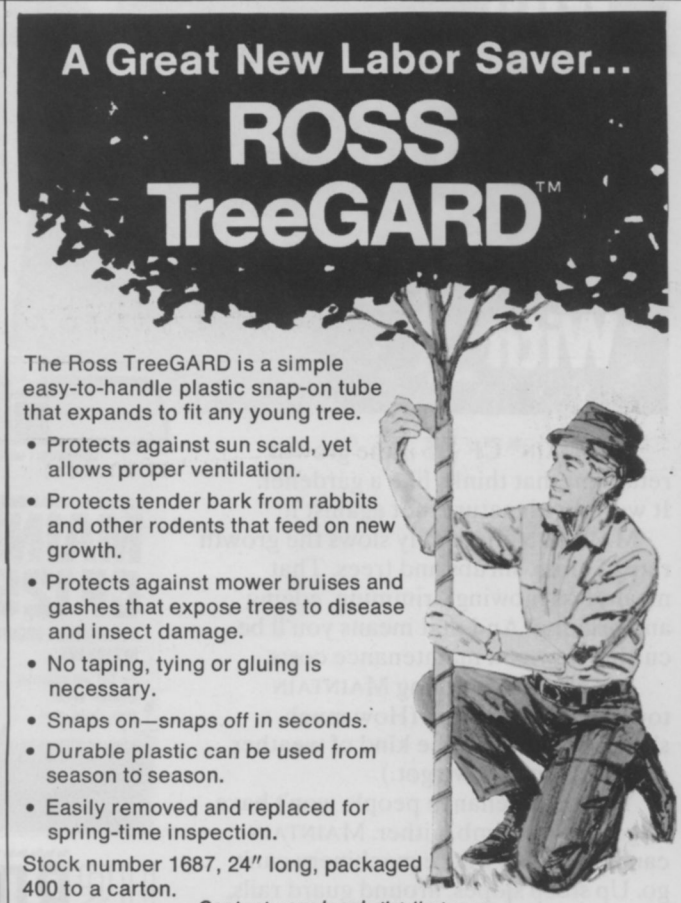
For more details and samples just ask Mr. **TU-TUF** . . . write today!

STO-COTE PRODUCTS, INC.
Drawer #310 • Richmond, Illinois 60071

Circle 123 on free information card

A Great New Labor Saver...

ROSS TreeGARD™



The Ross TreeGARD is a simple easy-to-handle plastic snap-on tube that expands to fit any young tree.

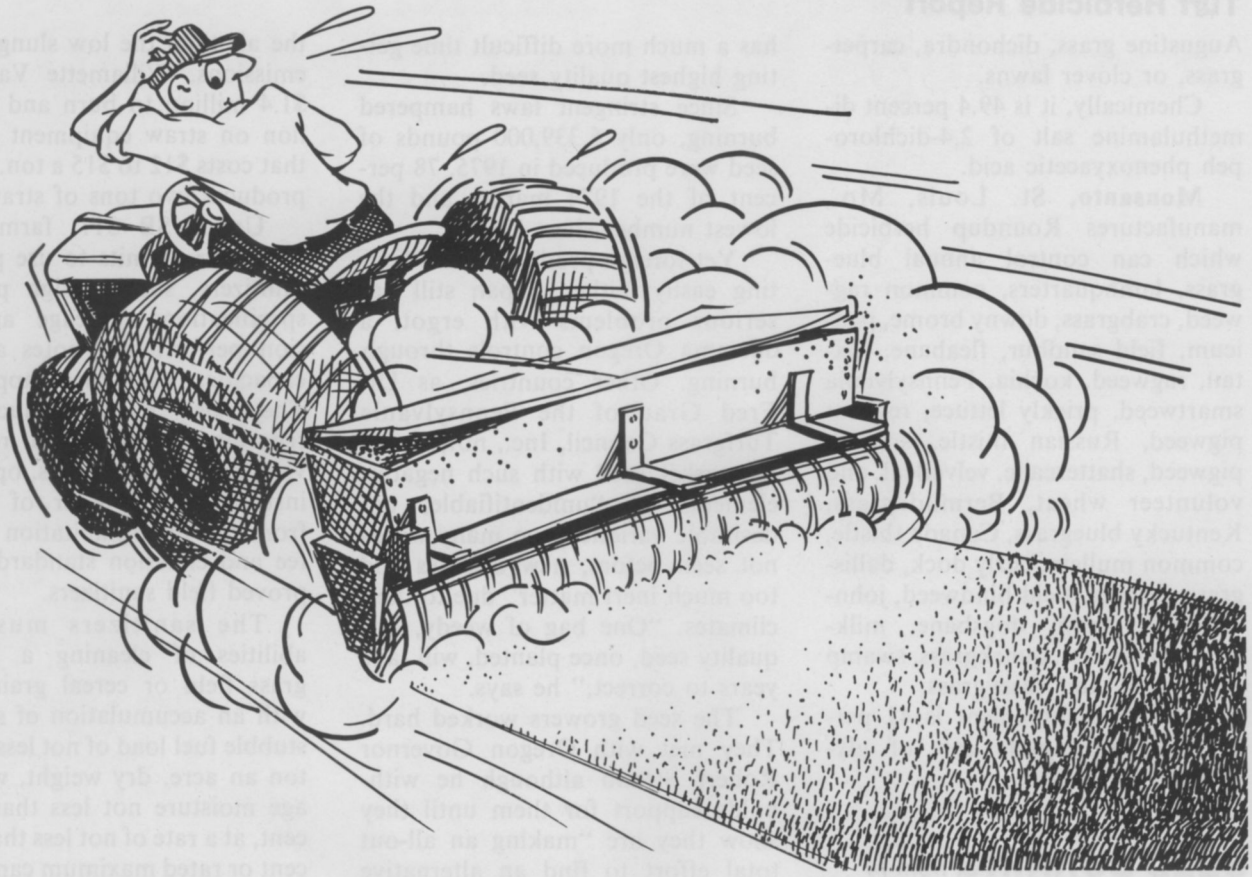
- Protects against sun scald, yet allows proper ventilation.
- Protects tender bark from rabbits and other rodents that feed on new growth.
- Protects against mower bruises and gashes that expose trees to disease and insect damage.
- No taping, tying or gluing is necessary.
- Snaps on—snaps off in seconds.
- Durable plastic can be used from season to season.
- Easily removed and replaced for spring-time inspection.

Stock number 1687, 24″ long, packaged 400 to a carton.

Contact your local distributor or

Ross Daniels, Inc. 1720 Fuller Rd., West Des Moines, Iowa 50265

Circle 111 on free information card



TOUCHDOWN*
...this Elite starts FAST.

Touchdown Kentucky Bluegrass is no slow poke on your fields or fairways. This new variety gives you the quick start not usually associated with Elites—and once it germinates it keeps right on growing sending out vigorous rhizomes and new shoots to quickly give you a turf cover that lets you breathe easy. Faster cover means fewer washouts and blowouts, less competition from moisture and nutrient robbing weeds and a more quickly established turf for sale as sod or play on fairways. Touchdown can be mowed short and its density means you can plant it right up on tees too. You'd expect this with Touchdown's pedigree.

Touchdown was discovered by a professional—Tom Rewinski—Course Superintendent at the famed National Golf Links of America on Long Island. It was first evaluated by Dr. C. R. Funk at the turf grass breeding program at internationally acclaimed Rutgers University. Since Rewinski's discovery, intensive evaluation there and at numerous other institutions Touchdown has received top turf quality ratings.

And it only stands to reason that Touchdown will be a lower cost management grass. More rhizomes and side shoots means growth is directed where you want it—not just mow, mow, mow. Greater levels of disease resistance means fewer costly fungicides and dense aggressive turf means better competition against weeds and Poa annua.

Professional Quality Seed of Certified Touchdown Kentucky Bluegrass is now available.

To find out how great Touchdown is—contact your distributor and try some.

*Plant variety protection applied for.

Produced and distributed by

PICKSEEDWEST, Inc.

Box 888, Tangent, OR. 97389 (503) 926-8886

Available from:

Lofts Pedigreed Seed, Inc., Bound Brook, N.J. 08805 (201) 356-8700

Lofts/ New England, Arlington, Mass. 02174 (617) 648-7550

Lofts Kellogg Seed Co., Millwaukee, Wis. 53201 (414) 276-0373

Lofts/ New York, Albany, N.Y. 12205 (518) 456-0042

...in Canada: Otto Pick & Sons Seeds Ltd.,

Box 126, Richmond Hill, Ont. L4C 4X9 (416) 884-1147 Telex: 06 219623

Box 4, Grp. 200, R.R. 2, Winnipeg, Man. R3C 2E6 (204) 633-0088

Box 151, St. Hyacinthe, Que. J2S 5J9 (514) 799-4586

Circle 138 on free information card

Augustine grass, dichondra, carpetgrass, or clover lawns.

Chemically, it is 49.4 percent dimethulamine salt of 2,4-dichloropeh phenoxyacetic acid.

Monsanto, St. Louis, Mo., manufactures Roundup herbicide which can control annual bluegrass, lambquarters, common ragweed, crabgrass, downy brome, panicum, field sandbur, fleabane, foxtail, ragweed, kochia, Pennsylvania smartweed, prickly lettuce, redroot pigweed, Russian thistle, smooth pigweed, shattercane, velvetleaf, and volunteer wheat, Bermudagrass, Kentucky bluegrass, Canada thistle, common mullein, curly dock, dallisgrass, fescues, field bindweed, johnsongrass, hemp dogsbane, milkweed, paragrass, quackgrass, swamp smartweed, and vaseygrass.

Its active angredient is 41 percent isopropylamine salt of glyphosate.

SEED BURNING *from 14*

Oregon for reproduction. This market may dry up for the state now that Europe markets won't accept seeds not meeting certification. Without open field burning, Oregon has a much more difficult time getting highest quality seed.

Since stringent laws hampered burning, only 5,339,000 pounds of seed were produced in 1975, 78 percent of the 1974 market and the lowest number since 1969.

Yet foreign producers aren't sitting easily, either. Japan still has serious problems with ergot, a dilemma Oregon controls through burning. Other countries, as Dr. Fred Grau of the Pennsylvania Turfgrass Council, Inc., notes, tend to market seed with such negative elements as "unidentifiable, undesirable varieties, too many weeds not seen before, new diseases and too much inert matter" due to their climates. "One bag of weedy, low quality seed, once planted, will take years to correct," he says.

The seed growers worked hard. They met with Oregon Governor Robert Straub although he withholds support for them until they show they are "making an all-out total effort to find an alternative solution." Under SB 311, he may suspend the bill in case of hardship or disease and similar catastrophes or may suspend burning entirely. But the Governor said he believes growers pursue open field burning as least resistance and economic opportunism, and have not researched alternatives properly. Oregon seed farmers heartily refuted this and refer to $531,000 of $954,826 of their budget spent for sanitizing research. Council member Scott Lamb points out they paid for a straw cubing plant and appointed a five man committee to study straw cubing and briquetting.

Some farmers pay to $90,000 for their own straw machinery. They donate and haul straw to experimental plants for free but still face problems. The best one farmer could do was three acres an hour with very low moisture condition, significant emission and after burn from his $35,000 investment. It required alterations to reach satisfactory smoke control and acreage production (he never reached both at the same time), and his neighbors asked he return to field burning since it circulated smoke higher into the air than the low slung machine emissions. Willamette Valley pays $1.4 million to burn and $1.2 million on straw equipment for straw that costs $12 to $15 a ton. One acre produces two tons of straw.

Under SB 311, farmers must apply for permits to use pilot field sanitizers, show design plans and specifications, acreage and emission performance notes and rated capacities with their applications. They also must produce details regarding availability of repair service, replacement parts, operational instructions, a letter of approval from the Field Sanitation Committee and emission standards for approved field sanitizers.

The sanitizers must prove abilities of cleaning a harvested grass field or cereal grain stubble with an accumulation of straw and stubble fuel load of not less than one ton an acre, dry weight, with average moisture not less than 10 percent, at a rate of not less than 85 percent or rated maximum capacity of a period of 30 continuous minutes. It cannot exceed these emission standards; 20 percent average capacity out of main stack; leakage not to exceed 20 percent of the total emis-

Continues on page 46

Circle 119 on free information card

Circle 117 on free information card

How to make your board see the value of new turf equipment.

Convincing your Board of Directors that new turf equipment is a neccessary and sound investment can be one of your most difficult tasks. They don't always see the benefits behind such a purchase.

And as good businessmen, they won't commit the money until they're sold on the expenditure. So when it comes time to face them, here are some of the things you should point out.

Point #1: The Duffer Demands More.

Today's golfer is more sophisticated than ever before. He has seen, and many times played, some of the finest courses in the world. He recognizes the value of a good course. And if yours is sub-par, he'll go elsewhere.

With this more sophisticated golfer comes the need for more sophisticated golf course maintenance. Heavy player traffic has increased the work required to keep the turf in top condition. So jobs that were once optional are now mandatory. Where spiking a green used to be sufficient, today it also needs deep aeration.

All this dictates the use of specialized equipment that wasn't available ten or even five years ago. Equipment that will enable you to build and maintain a top flight course, and help avoid special turf problems that could prove extremely costly.

Point #2: Machines Do More.

In the past decade, the price of labor has tripled. The same number of men must do more work in less time to give you the same value for each labor dollar invested. Mechanized equipment allows you to trim hundreds of unnecessary man-hours. One man can now cut more sod in an hour than six men used to cut in six hours. Or that same man can aerate 18 greens in a few hours instead of a few days.

New engineering concepts coupled with precision machinery means he'll do a consistently good job. You get better results and fewer occasions when a job must be redone.

And your turf equipment is depreciable; something your labor is not. You get an accounting break over a period of years. At the end, it's like owning a piece of free machinery. One that will continue to save you money long after you've paid for it.

Which brings us to the third point.

Point #3: Longevity Makes Them Worth More.

Equipment life should be a prime consideration when you select a manufacturer. The longer a machine works, the more it does, and the less maintenance it requires, the better your investment. And here's where we'd like to put in a little plug for Cushman and Ryan turf equipment.

Both lines of machinery are built to last . . . and last. It's not unusual to see a piece of Cushman or Ryan equipment still doing it's daily chores after ten or fifteen years of use. We believe the idea of "planned obsolescence" should be obsolete.

But performance is just as important as longevity. A Cushman Turf-Truckster and its accessories give you the capabilities to transport, spray, spike, dump, aerate, and top dress . . . all from *one* power source.

Ryan offers a machine for almost every turf task. Equipment that does a better job, in less time, and with a minimum of maintenance. For over 30 years, all Ryan equipment has been built with three goals in mind: quality, performance, and innovation.

If "A Day With the Board" is in your future, we'd like the opportunity to tell you more about the full line of Cushman and Ryan Turf equipment. Write to us and we'll send you our catalogs, full of detailed product information. Information that may help you open a few eyes to the value of new turf equipment.

CUSHMAN®

RYAN®

OMC-Lincoln,
a Division of Outboard
Marine Corporation,
6730 Cushman Drive,
P.O. Box 82409,
Lincoln, NB 68501

Circle 105 on free information card

sion and no significant after-smoke originating more than 25 years behind the operating machine.

Once approved, acres burned by approved field sanitizers won't apply to open building acreage allocation or quotas but will operate under either marginal or prohibition conditions.

In the direction of burning, Oregon seed farmers hope to use 'the big burn' of five square miles of seed liner in one block, lighted scientifically on a good burn day for maximum combustion, a minimum of smoke and maximum lifting.

The seed growers are challenging the validity of parts of SB 311 in a class action suit filed in Marion County Court recently. They are asking the suspension of the 195,000 acres quota be lifted but are not now protesting the $4 an acre burning tax. The defendants are the State of Oregon and the Director of DEQ, Loren Kramer.

Two Lane County residents have also named six seed growers in a suit which technically involves all growers in Lane, Lynn and Benton Counties. This class actions suit was recently granted a change of venue from Lane to Deschutes County and is scheduled for late July in Bend, Ore.

It falls into a summer of uncertainty for the Oregon seed growers, into prime burning time as aphids and aphid-related virus infestions attack cereal fields and the fields lack many defenses. □

TRELAN

"Whole Tree Chipper"

New forward discharge spout designed for the tree services.

"Trelan is the machine I've dreamed of for years."
Robert Klausing
Klausing Tree Service
New Lenox, Ill.

STRONG MANUFACTURING COMPANY
498—8 Mile Rd., Remus, Mich.
Phone (517) 561 7591

Circle 131 on free information card

W.I.N. with NITROFORM® and save!

W.I.N. with Nitroform® nitrogen . . . and save! On time and labor.

Lawn & Golf bags it!

HERCULES INCORPORATED Turf and Horticultural Products Wilmington, Delaware 19899

STH76-15A

Circle 127 on free information card

W.I.N. with NITROFORM® and save!

W.I.N. with Nitroform® nitrogen . . . and save! On time turf is out of play.

Leon Short bags it!

HERCULES INCORPORATED Turf and Horticultural Products Wilmington, Delaware 19899

STH76-19B

Circle 118 on free information card

W.I.N. with NITROFORM® and save!

W.I.N. with Nitroform® nitrogen . . . and save! On time and labor.

Geo. W. Hill bags it!

HERCULES INCORPORATED Turf and Horticultural Products Wilmington, Delaware 19899

STH76-9A

Circle 122 on free information card

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 50¢ per word. Box number, $1. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

FOR SALE: 2 used aerial baskets — 50 ft. working height, 2 Asplundh brush chippers. Bean sprayer, 35 G.P.M. Vermeer stump cutter 1560. Parkway Tree Service, Milwaukee, Wisconsin. Phone 414 257-1555.

FOR SALE 1966 Asplundh aerial lift with chipper box. Phone 707 459-2013.

SEVERAL 50 FOOT SERVI-lifts mounted on GMC trucks. Call 401 725-2250.

PUBLIC AUCTION, September 8, 1976, Denver Turf Farms, Inc., Starting 10:00 A.M., RR 1, Keenesburg, Colo. 303 255 3322. 30 miles N.E. of Denver, 1 mile west of Junction of Colo. 52 and Colo. 79. Terms: Cash. Selling at the auction will be the following: 1971 Ford 9000 truck tractor, 1965 KW truck tractor, 1975 ¾ ton Chevrolet, 1974 Strick 40 foot trailer (with grain sides), 1963 Fruehauf 40 foot trailer, 1975 3 axle gooseneck trailer 24 foot, 1973 584 Case forklift (diesel), 1972 584 Case forklift (gas), 2 1973 Wiggins tollable forklifts, 1974 Brouwer sod harvester on 300 Ford tracotr, 1966 3000 Ford tractor (with dual turf tires) (diesel), 35 Massey Ferguson tractor (with turf tires), 1975 9 Gang Jacobson mower, 1 Brilliant grass seeder, 1 Clark sprayer, 1-4 ton fertilizer spreader, 1 aereator, 1 turf Quaker, 1 field roller, 1 Ryan sod cutter, 1 Roll-A-Pack Roller, 1 sod blade sharpener, 60,000 feet of 3" aluminum pipe and sprinkler, 40,000 feet of 2" aluminum pipe and sprinkler in like new condition.

SUPER HYDRAULIC SPRAYER, truck mounted, both, very good running condition. 3 years old, 50 GPM, 800 PSI, 30 horsepower engine, 600 gallon steel tank. Hoses: 300 ft., ¾", filler; anti-syphon; bean gun; feeding needle; spare parts. Originally worth $6,500. 3 year old, 289 cubic inch, 1959 engine in 1954 F-600, with helpers. $2000 in overhauls. 2 good, spare, mounted tires, racks. $3000. Phone 203 878-3296.

1970 HIRANGER mounted on 1970 F600 Ford truck with chip box and side tool boxes, very good condition, $22,500.00. John Bean sprayer — model 10-10, 200 gallon tank, electric start, hose and electric reel. Trailer or skid mount, $1950.00. Osborne Bros. Tree Service, Mentor, Ohio 44060. Phone 216 255-9109.

570 CASE GAS TRACTOR 400 hours, 3 point hitch, P.T.O. Wide front, dual turf tires front and back. Roller, tractor drawn with water filled 10 tons, 8 ft. wide. Ryan sod roller. Phil Cooling, Durand, Ill. Phone 815 248-2775.

1971 FORD F-500 with LR45 Asplundth lift 8 outriggers, complete with chipper box, saddle tank 8 tool boxes, $14,500.00. Texas Tree Service, 5733 Oakdale, Fort Worth, Texas 817 451-5380.

1968 CHEV DUMP with large chipper box & tool boxes, $1,500.00. Texas Tree Service, 5733 Oakdale, Fort Worth, Texas 76119. Phone 817 451-5380.

50' SKYWORKER on 1970 Chevrolet — chip box, hydraulic tool outlet. Jerry Lupton, 32 Martha, Tiffin, Ohio. 419 447-3726.

1974 SKYHOOK CRANE, 100 ft., mounted 1967 Int. 1890, $15,000. Chevalier, Highgate Springs, Vermont. 802 868-7709.

SEEDS

SOD QUALITY Seeds Merion, Fylking, Delta, Park, Newport, Nugget, Adelphi, Cheri, Glade and Baron bluegrasses also fine fescues. Manhattan rye grass. Custom mixing available. Michigan State Seed Co., Grand Ledge, Michigan 48837. Phone 517 627-2164.

HELP WANTED

YEAR ROUND WORK A.A.A. Tree Service, Inc. of Florida. Looking for experienced top notch climbers with or without truck and equipment to work by the hour, on percentage or under Franchise in Florida areas. Also needed older men with sales ability. Mechanic with chain saw experience. Man to operate his own tree spade. Henry Hardy, Jr., P.O. Box 6173, Orlando, Fla. 32803. Phone 305 339-5242.

ARBORIST Village of Downers Grove, Illinois. Salary $12,000-$14,000, yearly. Experience desirable in Dutch Elm Disease and other tree diseases. Tree Planting, tree trimming, and ground maintenance and leaf pickup. Must be able to deal with the public. Excellent opportunity for qualified individual. Send resume to: E. Tanner, Personnel Officer, 801 Burlington, Downers Grove, Illinois 60515.

CITY OF MIAMI Civil Service Examination for Facilities Grounds and Turf Manager. Salary $1,143-$1,460 month. Degree in Agronomy or Turf management plus 3 years experience, or 5 years full time Turf Management experience. Send resume and transcript to City of Miami Civil Service, P.O. Box 330708, Miami, Florida, 33133. Deadline, August 31, 1976.

INSTRUCTOR-HORTICULTURE, turf grasses, nursery, landscape installation and maintenance. B.S. in field plus two years experience in field, or six years in field. Ability to relate to young people. Write brief resume — submit to Rex Gaugh, Director Pinellas Vo-Tech Institute, 6100 154 Avenue N., Clearwater, Florida 33520.

SALES HELP WANTED: Horticultural firm seeks a sales representative to sell grass seed (including many of the new improved varieties of bluegrass, fescue, and ryegrass), chemicals, and fertilizers to golf courses in the Northeast. All replies confidential. Write Box 153, Weeds, Trees & Turf, Box 6951, Cleveland, Ohio 44101.

GRADUATE ORNAMENTAL HORTICULTURIST or agronomist to train for supervising chemical section of major industrial landscape maintenance division. Qualified to pass pest control operator and pest control adviser exams. Interviewing in San Jose, Calif. Resume to Box 3202, San Jose, Calif. 95156.

CITY FORESTER — responsible planting, maintenance, removal all city street trees under superintendent parks, college degree arboriculture or equivalent; considerable field experience, one year Supervisory position required. Send resume or call Personnel Dept., City Hall, Providence, Rhode Island 02903. Telephone 401 421-7740 ext. 306.

MISCELLANEOUS

RETREAD RYAN SODCUTTER
RETREAD YOUR RYAN SODCUTTER WHEELS
Original factory retread and material, at 1/3 the new replacement cost. 2-3 day service on all sizes.
MIDWEST PLASTICS, INC.
956 Prosperity Ave., St. Paul, Mn. 55106
(612) 771-8891

FOR SALE

LAWN-A-MAT OPERATION in San Diego. $20,000 (part. fin. avail.) P.O. Box 17372, San Diego, Calif. 92117.

WANTED TO BUY

WANTED — Bean Royal 55 pumps and Bean 701 regulators. Washington Tree Service, 20057 Ballinger Rd., N.E., Seattle, Washington 98155. Phone 206 362-9100.

continued on page 20

Advertisers

Adelphi Kentucky Bluegrass 23
Austin Products, Inc. 29
E. E. Burlingham 13
Crown Chemical Co. 21
Cushman Motors 45
Deere & Company 33
Diamond-Shamrock Corporation 9
Ditch Witch Trenchers 31
Excel Products 35
Gravely 48
Hercules, Inc. 38, 40, 44, 46
hesston 3
Jacklin Seed 15, 37
Jacobsen mfg. Co. 49
Kembro Company 40
Johns-manville 7
Magline 39
Mitts & Merrill, Inc. 36
Northrup King & Co. 5
Perlite 32
Pickseed 43
Princeton Mfg. Co. 38
Ross 42
Rudy Patrick 25, 26
Ryan Equipment 17
Sto-Cote Products, Inc. 42
Tee-2 Green 2
U.S. Borax 41
Velsicol Chemical Corp. 18, 19
Vermeer 48

split logs to firewood in seconds

Faster, easier and more economically than ever before, Vermeer Log Splitters take the work out of making firewood. A single control lever activates the powerful overhead cylinder, hydraulically wedging a heavy-duty cutting blade through any log up to 30" in height — under 22,000 lbs. of splitting force. You can split, stack and have a truckload of firewood ready for delivery in an hour. Easy to operate. Easy to maintain. Powered by the hydraulic system of a farm tractor (LS-100) . . . or available as a self-contained unit (LS-200). Vermeer Log Splitters are ideal for parks, campgrounds, tree farms, nurseries and rental operators. Write today for complete information.

VERMEER MFG. CO.
7208 NEW SHARON ROAD
PELLA, IOWA 50219

Circle 107 on free information card

FREE catalog of grounds care equipment

Full-color catalog shows the full line of Gravely lawn and garden tractors with accessories for mowing, grounds maintenance, gardening, snow removal, and more. Unique tractors feature all-gear transmission that Popular Science called "probably the world's most rugged small gear-type tractor drive."

Write or circle number on inquiry card

Authorized GSA
Federal Supply Schedule
GSA-07S-00768

GRAVELY

3508 Gravely Lane
Clemmons, North Carolina 27012

Circle 106 on free information card

Meeting Dates

Ohio Nurserymen's Association, Summer Meeting, Hueston Woods, College Corner, August 17-29.

Greater Cincinnati Golf Course Superintendents Association Meeting, Kenton Country Club, August 17.

Northern Michigan Turf Managers Association Meeting, Cheboygan Country Club, August 17.

Vermont Plantsmen's Association Annual Meeting, Randolph Center, August 18.

Rocky Mountain Golf Course Superintendents Split Meeting, Colorado City, Cheyenne, Glenwood Springs, August 19.

National Recreation and Park Association, Institute on Park Operations and Maintenance, Colorado Springs, Col., August 22-24, contact Frank D. Cosgrove, director, NRPA's Western Service Center, P.O. Box 6900, Colorado Springs, Col. 80934.

Illinois Turfgrass Foundation Golf Day, Indian Lakes Country Club, August 23.

Eastern Region, International Propagator's Society, Rutgers University, Rutgers, N.J., August 23-26.

Rhode Island Turfgrass Field Day, Turfgrass Research Farm, University of Rhode Island, Kingston, August 25.

International Symposium on Biological Control of Weeds, University of Florida, Gainesville, August 30-Sept. 2.

Tri-State Golf Course Superintendents Association Meeting, Jasper Municipal Golf Course, Inc., Set. 7.

Northern Michigan Turfgrass Field Day, Traverse City Country Club, Sept. 8, contact Scott D. Eicher, department of Crop & Soil Sciences, Michigan State University, East Lansing, Mich. 48824.

Michigan State University Field Day, Traverse City, Sept. 9.

Oregon Association of Nurserymen, Annual Convention, Inn of the Seventh Mountain, Bend, Sept. 9-12.

Pacific Horticultural Trade Show, Anaheim Convention Center, California, Sept. 11-13.

California Landscape Contractor's Association, Inc., Pacific Horticultural Trade Show, Anaheim Covention Center, Sept. 11-13.

Nebraska Golf Course Superintendents Association Meeting, Mead Experimental Station, Mead, Sept. 13.

19th Annual Western Fertilizer and Pesticide Safety School, Sheraton Inn, Fresno, Calif., Sept. 13-14.

Golf Course Superintendents Association of America 50th Anniversary and Tournament, Sylvania Country Club, Toledo, Ohio, Sept. 13-15.

Third International Controlled Release Pesticide Symposium, University of Akron, Sept. 13-15.

If we don't have the gang mower you need, nobody has.

Like George Cornell of G. L. Cornell Co. in Gaithersburg, Maryland, all of us Jacobsen Distributors carry a full line of gang mowers. From Jacobsen.

It's the most complete variety of gang mowers made by anybody.

This means that we can match up your mowing needs with the right kind of equipment configurations.

Take the Jacobsen Fairway gang mowers. You get a choice of three different wheel styles (steel, semi-pneumatic and pneumatic). There are six-blade standard and 10-blade high-frequency units for cuts as smooth as a carpet.

And we offer 3, 5, 7, 9, 11, or 13-gang combinations. With adjustable cutting heights ranging from ⅜" to 2¾".

Then there are Blitzer gang units for areas other than fine turf. You have the same choice of three wheel styles. Plus bigger 10" reels with either four or five blade units. And 3, 5, 7, 9, and 11-gang combinations that mow up to a 25' 10" swath. With cutting heights of 1" to 3½".

For tractors with 3-point hydraulic lift systems, we have the 3 and 5-gang Ram Lift Ranger. The mowing units lift for quick transport.

Now for the icing on the cake. No matter which units you end up with, you'll benefit from the sealed housing design. You need lubricate them only one time each year. Period.

And we provide you with the kind of complete back-up service that Jacobsen Distributors are famous for.

Next time you're in the market for gang mowers, contact your Jacobsen Distributor. If you're a choosy person, you couldn't go to a better place.

You'll have the world's most complete line to pick from.

Your Jacobsen Distributors.

Great products deserve great service.

For the name of the distributor near you write: Jacobsen Turf Distributor Directory, 1721 Packard Avenue, Racine, Wisconsin 53403

"One crew grows our sod, another crew lays it at the customer's home or place of business. . .Both crews have their own reasons for preferring

baron* Kentucky Bluegrass."

John Hoerr of D. A. Hoerr & Sons, Peoria, Illinois.

D. A. Hoerr and Sons, Peoria, Ill., raises 500 acres of sod and lays much of it through their Landscape Contractual Division at commercial, industrial, municipal and homeowner sites. James Hoerr says: "Since we began using Baron Kentucky Bluegrass, we've had less problems raising a good quality sod and even fewer problems after the sod is laid. We can't just sell sod and hope for the best. We're responsible, even after installation. We find it pays to start with the very best seed we can buy. Baron gives us a well knit sod that takes root quickly, cutting down on service calls".

"When it comes to marketing sod, I can do it faster with Baron. John Hoerr says, "Baron's fast germination and quick development into mature sod shortens the time between planting and the day I sell my sod. In the sod growing business, that means money in our pockets."

"We use a blend of 3 bluegrasses with a minimum of 50% being Baron Kentucky Bluegrass. The other two varieties are Majestic and Merion. The high percentage of Baron insures us of what we consider to be our safety factor."

"Since we have been putting Baron in our mixture, we find the overall color holds up with less fertility. I use less fertilizer with Baron in the mixture than I have with any other bluegrass mixtures."

"All of our sod is mechanically harvested so it's important that root development is rapid and our sod holds together well. Baron lets us keep our fields clipped close and roots seem to knit well, giving us less hauling and handling problems. In our Landscape Contract and Maintenance Contract Servicing Departments, we know in advance complaints from the end user will be minimal."

If you're a sod grower, golf superintendent, or a professional landscape contractor, top quality turf is important to you. Lofts is ready to help with Baron, Majestic or Touchdown Kentucky Bluegrasses, Jamestown Chewings Fescue, Yorktown and Diplomat Ryegrasses as well as other varieties.

LOFTS

Lofts Pedigreed Seed, Inc.

Bound Brook, N.J. 08805 / (201) 356-8702

Lofts/New England
20 Beck Road
Arlington, Ma. 02174
(617) 648-7550

Great Western Seed Co.
Box 387
Albany, Or. 97321
(503) 926-2636

Lofts/New York
4294 Albany St.
Albany, N.Y. 12205
(518) 456-0042

Loft Kellogg Seed Co.
322 E. Florida St.
Milwaukee, Wi. 53201
(414) 276-0373

Canadian Baron Dist.
Oseco Limited
Box 219, Brampton
Ontario, Canada
(416) 457-5080

*U.S. Plant Patent #3186, Dwarf Variety

Circle 146 on free information card